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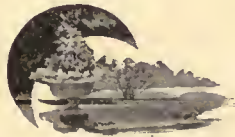


ILLINOIS HISTORICAL SURVEY

INDUSTRIAL.....



THE
BUILDING
INTERESTS



ILLUSTRATED



Chicago

The Goodspeed Publishing Company

1891

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PREFACE.

THE Publishers, with much satisfaction, herewith present to their patrons the first two volumes—The Building Interests—of their proposed series of works on Industrial Chicago. So well was our plan received before a line had been written, that success was assured from the beginning. It will be, then, but a short time until the entire series makes its appearance. Many citizens have ordered in advance the whole set of about fifteen volumes, and valuable contributions for all the proposed issues are being received daily.

Great advances have already been made in the preparation of the volumes to be devoted to the Manufacturing Interests, the Commercial Interests, the Professional Interests, the Public and Official Interests, and our great work on the History of the World's Columbian Exposition. All these volumes will be issued as fast as a large staff of experienced writers can prepare them, the last—the history of the World's Fair—going to press immediately after the concluding ceremonies of the exposition.

We acknowledge our great indebtedness to all the newspapers and trade periodicals of the city for valuable miscellaneous literature connected with the history of the building arts. It would be impossible, at this day, to prepare a great work of this character without access to the articles of contemporaneous history published in the local journals and serials during the last forty years, now in possession of the Chicago Historical Society. This source of information has proved invaluable. Contributions from many critical specialists will be found duly credited in the pages devoted to the Building Interests.

The volumes now being prepared will be identical in style, size and binding with the first issue, each set will be complete in itself and all will be superbly illustrated. No expense will be spared to render the succeeding volumes superior, if possible, to the first in quality of matter embraced, classification, mechanical execution, etc., and, as in the case of The Building Interests, local writers of exceptional fitness will assist in the task of preparation. The Publishers, who are residents of Chicago, have had years of experience in the compilation of historical works, and herewith announce that the entire series will be the product of Chicago writers, artists and enterprise.

THE PUBLISHERS.



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INDUSTRIAL

CHICAGO:



THE BUILDING INTERESTS.

INTRODUCTION.

BEFORE entering upon an analysis and a description of local architecture, it seems appropriate to present the leading features of the styles generally, that the non-professional reader may know at a glance the origin of the chief architectural forms to be seen mingled in such confusion throughout Chicago. In this description it is the deliberate intention to credit each nation, or each people, with the principal members invented by it, or in use by it when the focal light of history first reveals its civilization, and to notice the principal improvements in special forms devised by the genius or art of subsequent peoples. How well this is done in the following pages, must be left to the judgment of the reader.

It is not possible to classify with precision architectural styles, the extremities of which dovetail or blend together. Those writers who have undertaken the task have encountered a most serious obstacle, which, if they succeeded in surmounting, has left their attempts in a more or less chaotic or confused state. The fact that every old nation borrowed its fundamental building principles and forms from many antecedent and contemporary peoples, and that all modern nations have copied extensively and invented sparingly, lends to imitations in the United States, and particularly in Chicago, a most bewildering or confused air. Sufficient time has not elapsed in this city to permit the evolution of an established style from a multiplicity of forms; or, if it be insisted that time has been sufficient, then opportunity has been neglected, unless the last decade saw the advent in Chicago of a variation sufficiently pronounced to be entitled to the dignity of the title, "commercial style." But even this style is largely technic. A gigantic skeleton or box structure of steel is ornamented with columns, pilasters, piers, capitals, band-courses, arches, panellings, gables, moldings, etc., gathered from every nation of the earth and from every chronological cycle. To this the term "Chicago construction," or "skeleton construction," or "box construction," or "commercial architecture" is applied (the latter suggesting a much better apprehension of correct and dignified

system than either of the former). If the structure be covered with Roman building forms, there are architects in this city who call the *tout ensemble* "Roman style;" as many more call it "commercial architecture." In the residence portion of the city many buildings have a combination of the principal features of a half dozen styles. One architect calls the combination Romanesque, another Norman, another Italian, another modern. The confusion is thus confounded. The first bases his judgment on the arches of a conspicuous story; another on the columns and entablatures of a different story; still another on the general style of the facade and the last on the united effect of the various members. Were all to form a society grounded upon a certain code of principles and upon definite lines of professional action, the time would not be far distant when out of the gloom of mixed types and styles the sun of a golden age for Chicago architecture would break. It is this want of system or united action that prevents a fusion of the views of architectural authorities and affords the critic or jester his prized and sublime opportunity. However, the leading forms used by Chicago architects are clearly defined and will be pointed out. No attempt will here be made to furnish a basis for the clear-cut classification of styles, the principal object of this introduction being simply to describe the leading features of each style for the edification or instruction of the non-professional reader.

It is certain that making cloth and constructing shelters were the first complicated arts suggested to the ancients—the barbarians of Asia and Africa—and, for generations, the tribal chiefs counted their wealth and their strength from the possession of better ornamented goods or larger cabins than the plebeians. As years grew apace chiefs developed into kings, became powerful and ambitious, and, desiring to awe their subjects and draw social lines tighter, saw in palaces and temples and the dazzling splendor of structural adornment a means toward the end. Again, national ambition arose as individual ambition had formerly done, and China essayed to outrun Hindostan in the quality and number of buildings devoted to rulers and religion. The latter country erected structures which, in that day, were marvels. China accepted the challenge and built higher and broader; Egypt outdid her; Assyria and Persia put forth their gorgeous styles; distant Mexico, isolated from the other nations of antiquity, unable to imitate, built artistically; and finally the superb Greek orders blossomed with a color so rich, a feeling so tender and delicate, an artistic sense so simple and true, a form of such exquisite grace and proportion and a strength so vigorous, dignified and noble, that the world yet stands amazed in the shadow of her wondrous art.

A critical study and comparison of the ancient architecture of Egypt and the Orient disclose an important fact. It is certain that before the ancients had learned the lithic art, they had previously, for centuries, developed by slow degrees their skill and artistic sense in the construction of beautiful buildings of wood and brick. The age of wood in the Nile valley was prior to the fourth Egyptian dynasty, (3500 B. C.), when that marvelous people shook off their ancient lethargy and, at one bound, perfected the technic art of stone construction. Then the great pyramids lifted their heads above the Nubian hills and the valley of the Nile, and the oriental nations began to borrow styles and ideas. But the civilizations of India,

China and Assyria were as unbending then as now, and the innovation of stone walls, columns and piers was permitted only by degrees. Assyria, with a succession of fertile valleys and desert wastes, and with no stone within her borders, advanced little beyond the use of stone as revetments; but Persia, from extensive quarries within her domain, added to her profusion of decoration the more substantial grandeur of palaces and temples of stone. During the transition from wood to stone, the architects who were wanting in stone models and types, and were unable to invent suitable designs, undertook to reproduce in the lithic form their wooden columns, architraves, cornices, pilasters, piers, panels, lintels and even arches. It is this use of wooden models or forms which proves the previous existence of wooden structures, all vestiges of which disappeared thousands of years ago. No Egyptian residences of the fourth dynasty nor of the previous centuries of historic darkness have ever been found. All back of that is chaos and old night. The Asiatic nations afford no relief. Their architectures, showy and perishable, continued wholly to disappear long after the pyramids were erected.

The sturdy Egyptians, impressed with the awful solemnity of immortality, shaped all their affairs under the guidance of their despotic kings or their religious teachers. All was done for eternity. The pyramids were erected to withstand the convulsions of time. The bodies were embalmed to await the resurrection. Their language, in songs of praise for their king and peace for their nation, was chiseled into the enduring stone of the facades, columns and obelisks. The tombs, cut from the solid rock, were made eternal. Their steadfast and sublime belief in a future state, led them through great tribulations to the study of permanent building forms.

But previous to the great lithic age of the Egyptians, their architecture had advanced through unknown centuries to a high degree of perfection. The styles invented 6,000 years ago are imitated to this day. The sarcophagi of the kings and the facades of the rock-cut tombs, disclose perfect imitations of Egyptian wooden residences before the lithic era. There are the tall, narrow pilasters or piers running up from the ground to support the entablature; there is the rich, angled panelling of the facade; there are the doorways with their light jambs and architraves; there is the heavy cornice of ornamental sculpture and moldings; there are the bundle pillars made in imitation of wooden originals; there are the ends of the wooden beams carved into the entablatures; there are the several stories united by easy stairways; there is the abacus corresponding to the wooden cap, to distribute the vertical pressure; there are the walls made of square posts, grooved and jointed together in perfect imitation of wooden models; and there are the light, rounded lintels. The lightness of the structures alone, is convincing evidence of the existence of wooden prototypes.

From the ancient Egyptians (about 3500 B. C.) came some of the most interesting and useful constructive ideas employed by modern architects. Their technic ashlar work cannot be surpassed. They designed the column afterward called Doric, with its base, shaft and capital, and first gave to mankind that simple arrangement of two fluted columns supporting a plain lintel between two walls or piers, used by every nation since that date. Their titanic

stone structures were often revetted with granite or syenite, polished as smooth and bright as glass, and conveyed from quarries 500 miles distant. This was the origin of the idea of wainscoting. They invented and used the arch, richly ornamented moldings, a cornice consisting of several enriched members, a strong, square abacus to disperse the superincumbent weight, the rectangular doorway with its jambs and lintel, walls of several pieces grooved and jointed together and a columnated portico and rectangular panelling of great intricacy and beauty. Their architecture is something more than a technic art. The gigantic size of the structures and of the materials employed, the marvelous constructive skill and the extraordinary and massive simplicity pervading the whole, express, in the highest degree, limitless power and eternal durability.

Succeeding the age of the pyramids, the lagging centuries of the seventh, eighth, ninth and tenth dynasties ebbed away without leaving any trace, except a great black vacancy in the building activities of Egypt. During the eleventh and twelfth dynasties (2600 B. C.), the great obelisks were erected on the east bank of the Nile. The erection of these gigantic monoliths and the commencement of the temple at Karnac, may be said to date the beginning of the golden age of Egyptian building art. But art grew slowly. The Egyptians, allied in origin and civilization to the Chinese, had reached the culmination of their mental type. It was necessary to change their conditions, the influences bearing upon them, to stimulate the artistic sense which, through many centuries, had peacefully slept or slowly developed and strengthened. The change came in the invasion of the shepherd kings, who, for 500 years, trampled upon them, desecrated and profaned their sacred places, scorned the rugged grandeur of their massive architecture, derided their deified kings and introduced and forced upon them the gaudy glory of Asiatic architectural dress, tinsel and show. But the trials were art schools to the patient, placid Egyptians, and when at last the invaders were expelled, the art of building rose to a height never since wholly surpassed. The artistic sensibilities of the Asiatics had been impressed upon the rugged grandeur of the Egyptian character, just as afterward the Pelasgians impressed the Greeks, and the Etruscans the Romans. The magnificent temples erected during the eighteenth and nineteenth dynasties (about 1850 B. C. to 1320 B. C.) are the admiration of all the centuries since. During a period of little more than 500 years, the Pharaohs redeemed the previous ages of lethargy by a restless activity, and hundreds of gorgeous temples, carved with triumphant battle scenes and imposing, idolatrous ceremonies, rose on the banks of the Nile. War, the great educator and civilizer, had wrought the change. A surprising profusion of new and better building forms took the place of the old, and scores of noble details sprang into existence to glorify this grandest age of the oldest civilization. From Egypt spread out a thousand ideas, and viewing her alone in her ancient glories, the spectator must confess that every other nation of antiquity was an imitator or a plagiarist. The glories of the temple of Karnac were never duplicated, and it is a question whether the noblest Corinthian column at Rome can compare with the central column supporting the roof of the nave in that famous temple.

The great pyramidal pylons of the Egyptian temples were each often more than 100

feet long and twenty feet wide, and between them was a wide and stately entrance; back of them was an open court, surrounded on two or more sides by rows of columns, outside of which was the external wall. Over the columns and the wall was spread a roof, but the great central portion was left open to the sun and the storms. Back of the court were others, usually of smaller dimensions; but all with ranges of columns to support the roof, which covered either a portion or the whole of the space between the high outer walls. Invariably, on the colonnaded sides of the courts, were porticoes on the second story, where openings let out the gaze and in the fresh air. In some of the hypostyle halls of these temples, there were often eight or ten ranges of columns and piers on each side, and a great flat roof covering the whole. Colossal figures in front of the piers and historic paintings and sculpture in great profusion and of wonderful richness and beauty, covered the walls and columns.

Another Egyptian templar plan was a closed structure (cella), on two or more sides of which were ranges of columns or piers, and over all was spread a flat roof with a projecting cornice. This plan of temple became known as "peristylar," and furnished subsequent nations with the initial idea of their principal buildings. There are some remarkable features to be noticed in connection with these Egyptian temples. Both the Greeks and the Romans imitated the peristylar forms extensively. Nearly all the most beautiful structures of both nations were built in this form—a colonnade of extraordinary beauty surrounding a cella. But quite often a colonnade within the cella surrounded an open court. Thus both Egyptian styles were imitated by the Greeks and Romans in one building.

At a later date the Gothic architects copied in a noticeable degree the principal features of these structures. By them the two great pylons of the temples were replaced with two gigantic towers, crowned with spires, at the corners of the facade of their cathedrals; but the idea came from the Egyptians. By the Gothic architects the rows of columns were reduced to two in their typical structures, and used to support the clearstory as the Egyptians had formerly done. There is the rectangular plan; there is the central court, atrium or nave; there are the two rows of columns separating the nave from the side aisles; there are the interior porticoes; there are the outer walls; there is the clearstory, through the side of which light and air were admitted; there are the private halls at the farther end, corresponding to the chancel or apse; there are the beautiful and historic sculptures and paintings, and there are the same uses of worship or idolatry or sacerdotal deification, all invented by the Egyptians and borrowed and changed by the Gothic builders. But the latter were not the only borrowers; all nations and ages since have robbed the golden age of Egypt of its glory and ascribed its persistent and enduring ideas to the architectural pirates of succeeding epochs. The architects and builders of Chicago are borrowers in the same sense. Throughout the city are many buildings, ecclesiastical and otherwise, founded upon the general structural principles invented by the Egyptians nearly 4,000 years ago. Many of the churches are conspicuous plagiarisms. The Chamber of Commerce, the Rookery and scores of others of similar designs are but modifications of the square or rectangular or box palace-temples of Egypt with their open courts. There is the same rectangular ground plan, the

same inner court, the same division into aisle and nave, into court and offices; but the pylons are now a beautiful facade, the rows of columns are columnated walls, and the "sky-scrapers" rise far above their prototypes on the banks of the Nile, as if endeavoring to awe them or overpower their grandeur. The inner colonnades of the Egyptians have been walled up and partitioned into offices by the Chicagoans.

The borrowers here have the right, through usage and royal inheritance, to use the enduring ideas of the ancients. Great ideas are persistent and immortal, and are handed down as a jeweled legacy, from generation to generation, though wrung from the ancients in blood and tears. All nations and all people have been borrowers of building ideas—of all classes of ideas. The character and talent of an individual are the resultant of a ceaseless stream of ideas, beating upon the impressionable tablet of his mind and memory. This endless rain makes little or no impression upon mediocre minds; but falling upon the soil of genius produces a luxuriant verdure of fresh conclusions, new ideas. All great ideas are the fruit of genius. Genius is the great architect; talent the skillful builder. No one knows whence came his ideas; they rush in from a thousand sources, tumbling over each other in weak or ignorant minds, grouping or classifying in cultured or strong ones, ever uniting and combining under the focal light of reason, when held up to mental view by the representative faculty. The power of their combinations, their artistic arrangement, their skillful classification from contrast or resemblance, their bearing upon life and happiness, justice or prejudice, are the parents of opinion or belief.

A genius invents a pocket knife of one blade; another a button hook; another a seissors; another a corkserew; another a file; another a tweezers—all invented far apart and at different periods, from the necessities of alien peoples. Another, a philosopher, originates the idea of so shaping and sizing all these instruments as to unite them into a single one for the pocket. This compound instrument is the product of the combined genius of seven persons, each of whom represents the ripe intelligence of his people and his time. Each invention was the slow product of time wrung in trials and sorrows from necessity, the mother of invention. The purchaser of this knife will find it very handy, will admire it; but he will not lose much sleep in dreaming of the years of toil required by his fathers to perfect it. But the ideas live and benefit mankind though he may sleep and not dream. Thus it is with the principles of architecture; but the local architect in planning a "sky-scrapers" will lose no sleep over the ancient models of Thebes, Memphis or Persepolis, which furnish him his fundamental ideas.

The Egyptians, then, to recapitulate, preceding the year 1600 B. C., gave to mankind ideas of light, airy, wooden residences with walls of separate pieces, doors and windows capped with lintels or moldings, two or more stories one above the other united by staircases, strong upright posts serving the purpose of piers, awnings of light wood or cloth to shut out the sun and rain from the unglazed openings, cornices having the general features of those used to-day, carved panelling and wainscoting, rich paintings on the interior walls representing scenes of domestic life or war, the upper story a colonnaded gallery used as an observatory

and as a cool, airy apartment in hot weather, and ideas of temples with rectangular ground plan, an inner and an outer colonnade, a cella, aisles and nave, an open court, a richly paneled triforium, the clearstory plan of admitting light, sculptured real or fanciful beings, caryatic columns, the two pylons or towers of the facade, the imposing public entrance, the Doric column, the honeysuckle leaves and volutes of the capital, fluted shafts, the pointed arch of two slabs leaned together, the curvilinear arch and the pillared porch or portico found usually in the rock-cut tombs, the bell-shaped capital covered with a profusion of pond or marsh leaves and vines and containing the germ of the Corinthian order, great masses of battered masonry, etc., or, to be more explicit, they gave the world ideas of pillars, Doric columns, square piers, pilasters, capitals, cornices, curvilinear or pointed arches, colonnades, porticoes, galleries, porches, peristyles (adopted by both Greeks and Romans and by all subsequent peoples), distyle in antis, vestibules, pylons which become corner towers or bays, heavy battered walls of masonry, open and closed courts, moldings, wainscotings, revetments, mosaics, tilings, terra cotta, lintels, coping, abacus, flutings, pedestals, architraves, clear-story, attic-story, bas-reliefs, panels, caryatids, base, shaft, capital, ovolo, fillet, volutes, carved leaves, brick, ashlar work, nave, aisles, chancel or apse, stone polishing, sculpture, frescoing, obelisks, monoliths, monuments, immortality, engineering, architectural decorations, storied walls, temples, palaces, pyramids, tombs, etc.

When the light of history first falls upon the lower valley of the Euphrates, about 2500 B. C., it was the home of a light, wooden architecture of grand but gaudy beauty. The nations of Chaldea, Persia, Syria, Babylonia, Judea and India reveled in the same tawdry show, a wilderness of color and form, of fairy structures, the playthings of an hour, of decorative effect so brilliant yet defective, so grand yet garish, that the barbaric glory of that memorable time has descended to the nineteenth century in the lore of the Jews and the mystic tales of the pre-Christian kings and caliphs. Art had run mad in its youth; it remained for the Egyptians to heal and the Greeks to cure. The flimsy nature of the Asiatic structures doomed them to swift destruction within a few centuries after their erection. The sun-dried brick, the cement, the stucco, the light wooden beams and other frame-work, the rich and elaborate decorations fell soon after the cities were razed by hostile invasions, and now only scraps of material and building outlines reward the historic investigator or the archæologist. The Asiatics, gifted by nature with the best artistic sense then known to the world, produced the first elaborate art decorations; but they went mad in the performance and gave to history a succession of the most gorgeous yet barbaric spectacles. From the florid architecture of the Euphrates valley and Asia Minor came many of the most useful and beautiful building ideas or suggestions. The Assyrian and Persian sculpture and alabaster revetments made a powerful impression upon the plastic sensibilities of the Dorians of Greece. There grew up on the lower Euphrates an artistic sense so delicate, pervasive and romantic, that it traveled eastward to India and China, southward to Egypt and westward far across the Mediterranean, and produced a permanent effect upon the civilization of mankind. They were enthusiastic, impulsive, heroic and warlike, delighting in conquest and in the glorifi-

cation of their caliphs, and in their bloody invasions came in contact with many fragmental nations from whom they obtained, like a medley or crazy quilt, their gorgeous patchwork of architectural forms or details and their subtle yet incongruous building tastes. The Babylonians, having no stone, early brought their brick and wooden structures to a high degree of perfection. But the Persians had inexhaustible quarries of good building stone within their national borders, and, as a consequence, their structures have better withstood the withering touch of time and decay. After the conquest of Egypt by Cambyses (about 525 B. C.) the Persians began to imitate the lithic structures of that country: but their own previous architecture and that of the Assyrians was too vital a part of their civilization, was too dear to their artistic natures to be wholly thrown aside, and so they began to copy in stone their chief building features. The conquest of Cambyses had given the Persians, as well as the Egyptians, a new architectural and artistic impulse. Beautiful palaces of fresh designs, decked with a profusion of sculptured animals, costly ornaments and imperial ceremonies, all in florid and barbaric splendor, sprang up in all quarters of the kingdom. The ruins of Nineveh and Persepolis reveal an architecture of great similarity; in fact all the western Asiatic people seem to have been so nearly allied in governmental forms and social and religious customs as to have had practically the same architecture, which differed only in minor details. The great temples of Chaldea, Assyria and Persia, have many notable features. The substructure was a broad platform approached by a staircase of extraordinary proportions, and carved and sculptured in the highest art known to these artistic people with ceremonial observances and heroic battle scenes. Upon this broad platform rose a huge square or rectangular brick wall, extending upward in some cases several stories, and inclosing usually a paved court. Unquestionably, within this inclosure were formerly either ranges of wooden columns, at a distance of ten to twenty feet from the outer wall, or a second wall which took the place of the wooden columns. In the latter case the space between the two walls was partitioned or filled with masonry, and roofed and surmounted with a second story, inclosed outwardly by the wall, but opening inwardly through a colonnade of great beauty and peculiarity. Sometimes a third or colonnaded story crowned this structure. The court was invariably the scene of the most costly and elaborate sculpture and decoration. A beautiful entrance, yet to be described, led past characteristic colossi to the great court. Other large temples and the wonderful palaces of the caliph or his dignitaries possessed no open court, but were divided by walls sufficiently close to permit the entire structure to be roofed. Within the gigantic palaces, which were more or less fortified, were all the rooms necessary for the caliph and his household. Many of the Chaldean temples were six or seven stories high, square, or nearly so in outline, with each story smaller than the next one below, and all united by broad outer staircases, which led to the crowning structure of the whole, the holy of holies of the caliph. The massive superstructure of story above story of brick was supported by walls within walls.

As in Egypt the architecture of the lower Euphrates valley, 2000 B. C., shows every evidence of having been borrowed from a wooden original, or of having been mainly of wood

itself. An imitation of wooden members may be seen in the details of all the ruins. The most notable features of practical value to Chicagoans in the Asiatic structures before the Greek orders arose are as follows: Massive battered walls of vitrified brick, the frequent use of strong, square buttresses or offsets to support the high brick walls, beautiful and intricate panellings in many respect unsurpassed to this day, artistic bas-reliefs representing court scenes and domestic life, rich paintings and frescoings, ornamental pavements of vitrified tile, the perfection of the cement and stucco work, the immense size and easy ascent of the wonderful staircases, the unexpected yet purely artistic harmony of both color and architectural proportion, the marvelous beauty of the alabaster wainscoting and revetments, the frequent use of large semicircular arches and archivolt of enameled bricks worked in richly colored and perfectly figured designs, finished masonry and carpentry, commodious balconies and galleries with fluted columns having triple capitals which contained the germ of the Ionic volutes, numerous and ornamentally carved balustrades, a carved cornice with rounded moldings, richly dressed frieze and pyramidal, battlemented crest, portal guards of gigantic winged bulls and grotesque giants strangling lions, a broad vamp along which chariots and horsemen reached the great courts, bronze and brass ornaments and casings, silver, ivory and gold settings and embellishments, broad roofs covered with earth which supported a luxuriant tropical vegetation of flowers and aromatic trees, hanging gardens which were one of the seven wonders of the ancient world, towering astronomical observatories, surprising technic skill in the erection of permanent brick structures of seven stories, the method of vitrifying entire brick structures after they were erected, a very interesting system of ornamentation by reedings and multiple sinkings, a peculiar and elaborate mosaic of small cones in blent colors and unique patterns, the elaborate use of colors, particularly yellow, on a blue ground, in all buildings capacious vestibules and porticoes, dwarf pillars for the upper portion of walls, entire apartments lined with sculptured alabaster slabs, representing royal ceremonies and national prowess, vaulted or arched passages connecting the several courts, the admission of light by the plan of the clearstory, free-standing statues of bold, grotesque, but artistic designs, broad terraces dotted with clustered shrubs and intersceted by serpentine walks, galleried bridges uniting adjacent porticoes, the geometrical perfection of all decorative designs, complete architectural orders of base, shaft, capital and entablature, the original of the familiar arrangement of two circular columns between two square piers known as "distyle in antis," the prototype of the Corinthian capital, colossal lions in front of piers or pillars, great awnings of wood or cloth to shut out the sun and rain, the characteristic architecture of the temples, the great light and singular beauty of the columns which supported the roofs of the halls, the loftiness of the halls themselves and the dazzling effects of light secured, the Egyptian plan of inclosing a beautiful colonnade within a high wall, recesses for statuary in the thick walls, a series of cells around the halls for the private use of dignitaries, etc. Among the special members used were the following: Sun-dried and kiln-dried brick, mortar, cement, stucco, vitrified and enameled brick, tile and terra cotta, buttresses, offsets, niches, sculpture, bas-reliefs, carved moldings, reeded pilasters, fluted columns, stylobates, sculptured jambs, semicircular arches, archivolt,

compound panelling, frescoing, mosaics, wainscoting, revetments, the Ionic volute, the Corinthian capital, balustrades, architrave, abacus, ovolo, fillet, cornice, frieze, stairways, porticoes, galleries, balconies, porches, bridges, correct vaulting, piers, pillars, roofs, pavements gabled roofs, pediments, pedestals, base moldings, rectangular doors and windows, dentils, window and door caps, beveled or chamfered edges, etc., etc.

A comparison of the architecture of Egypt and the Euphrates valley reveals striking characteristics. The Egyptians brought the lithic art to a high degree of perfection; the Asiatics excelled in ornamentation. The structures of the former are famous for their massiveness, colossal size, durability, structural beauty and grandeur; of the latter for their evanescence, gaudy beauty, wealth of adventitious adornment and splendor. The Egyptians knew the use of the arch, but, like the Indians, believed it endangered the stability of their buildings; the Asiatics used it often over the portals of their palaces and the large gates of their city walls. The Nile valley gave to art the Doric order, the Corinthian bell, the honeysuckle leaves, the huge water-plant leaves, the clearstory, the two templar designs—a covered cella surrounded by a colonnade and a walled colonnade either surrounding an open court or all roofed over. From the latter came the three-aisled structure and the clearstory. The Euphrates valley gave the Ionic order, the springing volutes of the Corinthian order, buttresses and offsets, wonderful staircases, tropical roofs, correct vaulting, etc. The perfection of the architectural details of the two valleys from 2000 B. C. to 3000 B. C. proves a long period of previous development and the remoteness of human origin.

The earliest specimens of architecture in Greece show two distinct, clearly-defined forms—one rich, ornamental, light, gaudy, resembling closely the styles of Asia, and the other strong, bold, massive, simple, with the leading Egyptian characteristics except special ornamentation. Each style was typical of the people using it. The Pelasgians were full of sentiment, heroic conceits, were valiant to rashness, lovers of home, superstitious and emotional; the Dorians were practical, inartistic, cold-blooded, adventurous, hard, grasping and dominant. The union of the two people, the fusion of their mental types, soon became a potent force in the development of civilization, and, in the end, gave to Greece her crown of undying glory. From the Trojan war, nearly 1200 B. C., until the erection of the Doric temples at Corinth, about 670 B. C., the national character, mental cast and artistic instinct of the two antagonistic elements struggled for union and refined expression. It was not until after the Persian War of about 480 B. C. that perfect fusion was accomplished, and the purest architectural era of the world unfolded its splendors. The Greeks took the massive building forms of Egypt, embellished them with the refined details of the Asiatics and gave to the world the noblest architecture known to man—worthy of that crowning age of superb philosophy and divine sculpture. But they were borrowers of ideas—ideas of architecture and ornament, of color and proportion, from Africa and Asia, ideas of philosophy and religion from India, Judea and Egypt, ideas of sculpture from the brilliant paintings, gorgeous bas-reliefs and beautiful caryatids of Thebes, Nineveh and Persepolis; but the Greek mental genius was artistic and so they purified and perfected everything they touched.

About the year 670 B. C. there was erected at Corinth the first Doric temple in Greece—a massive Egyptian structure with Dorian refinements—the first of a series of improvements which culminated in the perfected Doric order. About fifty years later another was erected at Ægina, less massive and strong, showing the effect of Asiatic art upon the cumbersome Egyptian forms. At this time also a beautiful temple was built at Athens, and soon throughout all Greece the lofty structures rose, each more refined and pure than its predecessor, but all showing a marked and marvelous improvement, until the war with Persia doomed nearly all to dire destruction. Thus was lost to the world much of the infancy and youth of the truest art period of history—a time full of meaning and impulse, the generative era of simplicity and beauty in art, of the sublime artistic sense of the Greeks. After the war the æsthetic sentiment, at a bound, perfected itself and left to succeeding centuries scores of immortal works, a priceless legacy to purity and refinement and the joy of humanity.

The architecture of the Greeks was characterized by charming simplicity and purity, great strength and durability, perfect proportion, harmony of color, form and outline, and by the perfection of permanent types. From the crude Egyptian column at Beni Hassan they evolved the famous Doric order, and from the scrolled capitals of the Euphrates basin the beautiful Ionic order. From Egypt came ideas of the base, the fluted shaft, the necking, the ovolo or echinus, the abacus, the architrave and the cornice; but these members were reorganized, were reunited in perfect harmony of form, color, outline and proportion. The base was omitted in the Doric order, the height of the column fixed at from four to six and a half times its diameter, the abacus made plain and square, the ovolo very little curved but quirked at the top. Plain fillets and small channels were placed under the ovolo, and a small distance below a deep, narrow channel was cut in the shaft; but the flutes of the shaft, twenty in number, were continued up to the fillets, were separated by a sharp edge and not a fillet, and were less than a semicircle in depth. Over the architrave was a plain fillet called *tenia*. The frieze was ornamented with flat projections, cut by three vertical glyphs, called *triglyphs*. Between these were the *metopes*. *Guttæ* were placed under the *tenia* of the architrave, a broad fillet placed over the frieze, *mutules* cut on the soffit of the cornice and under these were carved several rows of *guttæ*. These additions made by the Greeks were improvements in the line of harmony of proportion, but the essential principles came from Egyptian or Assyrian prototypes. It is certain that the architrave corresponds to the beam, the triglyphs to the ends of the joists, the columns to posts, the pilasters to brick piers, the abacus to the slab used to distribute the downward pressure and the members of the cornice to the molding of the ancient wooden buildings—all imitations, but all improvements.

The Ionic capital came from Asia, but was so transformed, beautified and ennobled that a pure and permanent type was evolved. The Asiatic originals of this column show a base consisting of a plinth, a carved and elongated *cyma reversa*, a torus, and a fillet, then a fluted shaft, a bell carved, ornamented and lengthened often to ten or fifteen feet and sometime separated into three portions—usually two—an inverted and necked cup, a series of

scrolls and lines resembling a harp, and a double-bull crown or eap. The Greeks reduced the volutes to four and established the ornamented ovolo or echinus as the principal molding, placing it under the spirals. Very often on a necking below the echinus vines, flowers and honeysuckle leaves were engraved. The shaft was lengthened from eight and a quarter to nine and a half times its diameter, and was either plain or fluted, in the latter case there being twenty-four flutes separated by fillets. Various bases were used—usually the attic, but often the enriched Asiatic. The members of the entablature were either perfectly plain, or the bed-moldings of the cornice were beautifully carved or given a row of dentils.

It is certain, also, that from Asia came the first idea of the Corinthian capital and its shaft and base. In the Asiatic orders the volutes were repeated under each other and had the upright springing form given them by the Greeks, but the acanthus leaves were missing and often the base was much like the capital inverted. It is not improbable, however, that the Asiatic original of the Corinthian volutes was only a modification of the Ionic volutes. In this order the Greeks showed greater originality, though less perfect art, than in the Doric or Ionic orders. Fertile in artistic resources, with a surprising facility for blending or uniting harmonies, proportions and beauties, masters of elemental art, throbbing with the blood of expanding genius, the Greeks boldly took the bell-shaped capital of the Egyptians, compared and combined it with a similar one from Persia, reshaped and beautified it, attached the enrichments of carved honeysuckle leaves and reduced Ionic volutes, adorned the whole with rosettes and sculptured moldings, and gave to art their great Corinthian order. This act was the expiring pulsation of Greek art. The order lacked harmony of form and proportion, but was perfected by the Romans. In the Greek type the capital was in height more than the diameter of the shaft. At the top of the shaft were apophyges, a fillet and an astragal, which, in effect, figured as part of the capital. Above the astragal rose the bell set with two rows of acanthus leaves or caulicoles with eight in a row and a third row of leaves supporting eight small open volutes, four of which were under the four horns of the abacus and the other four between them with a flower on the abacus above. The volutes sprang out of twisted husks placed between the leaves of the central row. The abacus consisted of an ovolo, fillet and cavetto. The base was half a diameter high and the entire column about ten diameters. The base was often attic, but usually consisted of two scotie between tori, which were separated by two astragals. The entire entablature was very rich with sculpture, paintings and moldings. The architrave was divided into two or more fæcie. The lower part of the frieze ended in an apophyge and the cornice was ornamented with both modillions and dentils. This order though very beautiful lacked the true, expressive and pure art of the Greek Doric and Ionic orders. It was simply an attractive union of familiar architectural features, which lacked harmony of form and proportion. Even the decorative arrangement was defective. The principal ideas of the Doric and Ionic orders had been borrowed; but the Greeks so reshaped, readjusted and harmonized all the incongruous lines and angles, the cumbersome adjuncts and ungainly proportions, as to express in a degree never before seen a marvelous wealth of strength, beauty, simplicity, harmony and power. They had perfected a phonetic

art. It was different with the Grecian Corinthian order. Without inventing, without designing, they combined the perfected elements principally of the other two orders; but failed in true effect and left a form for the Romans to perfect.

But the amazing genius of the Greeks is best shown in certain special constructive details designed to add to the general effect of the whole structure as a work of pure art. A civilization that could produce the divine sculpture of Greece, could also produce architects able to grasp the harmony of details, their marvelous contributive union to a symmetrical whole. Accordingly it is not surprising to learn that the outlines of a Grecian column were slightly convex—the line being either hyperbolic or parabolic, and the columns themselves were slightly inclined inward to give an expression of greater security. The architrave was always slightly arched to correct the strong pedimental slope. All the parts were adjusted to each other in exact ratio, the columns were so many times their diameters apart, all measurements and distances were proportionate, oblique lines of distinct building members were parallel, the shafts of the columns tapered toward the top, the marble masonry was perfect, sculptured acrotina, metopes, pediments, moldings and rich colorings beautified the whole. An architect who could master all this possessed the power to give united expression to every feature of a structure. This was the genius of the Greeks—a crowning attainment never since surpassed. Architecture for the first time became perfect in Greece. The Greeks were purifiers; they gathered the crude but valuable architecture of the world like so much gold, threw out all debasing elements and quickly evolved perfect forms like fresh coin from the mint.

For the plans of their temples the Greeks used both forms found in Egypt and Asia—a cella surrounded or partly surrounded by a colonnade, and a colonnaded court inclosed by a wall and roofed over. They frequently combined the two forms in one temple, and reproduced the three aisles of the Egyptians. Sometimes the middle aisle became a cella, which was itself colonnaded. The Greeks perfected the low, broad gable, ideas of which they had obtained from Lycian or Pelasgian tombs, and made the sculptured pediments one of the most interesting and beautiful features of their architecture. Their usual method of lighting their great temples was the clearstory internally, but so arranged outwardly as to deflect the rain without interfering with the outline of the roof. They used caryatic figures, but not often as columns, though sparingly as supports and often on pedestals in front of columns. They adopted the Asiatic facade of two columns between two square piers. Perhaps their most noticeable architectural member was a row of columns supporting an entablature, which in turn carried a low gabled roof. This beautiful member is now generally used in large city, state or governmental buildings.

It seems, then, that the mission of the Greeks was to perfect the forms of architecture handed down by the ancient nations of Europe, Asia and Africa. Their fundamental ideas of columns supporting an entablature came from both Asia and Africa, of gabled roofs from Lycian tombs, of their two templar designs from Egypt and Persia. Their Doric order was Egyptian, their Ionic, Persian, their Corinthian, the decorated Egyptian bell and the Persian

volute. From the older nations came their bas-relief, caryatid, column, base, pedestal, capital, fluted shaft, abacus, ovolo, fillet, colonnade, balcony, gallery, arch, cornice, frieze, architrave, staircase, clearstory, cement, stucco, panelling, sculpture, pilaster, mosaic, fresco, pier, and scores of other special building members.

To recapitulate, they perfected and ennobled the Doric and Ionic orders, devised the Corinthian order, improved the clearstory method of lighting, transformed the Egyptian halls into beautiful temples, increased the number of moldings, divided the entablature into three members by addition and elimination, greatly enriched the cornice, formed two or more divisions of the architrave, established the pediment as a fixture in architecture, made the art of masonry technically perfect, blended necessary and ornamental elements, attained a marvelous simplicity, secured tasteful decoration, reduced building details to mathematical accuracy, carried the harmony of form and proportion to the highest state ever reached by man, and gave to humanity the purest, simplest and truest architecture yet seen upon earth.

Etruscan architecture furnished the foundation for the subsequent Roman style. Upon this at a later period, were grafted Grecian and Egyptian members. The Etruscan style was used in Italy from the founding of Rome until about the Christian era, when it became thoroughly fused with the Grecian and Asiatic forms. Its features are useful and important. The walls were of titanic blocks of stone, laid horizontally and often very skillfully ashlared. The segmental or semicircular arch was used often in sewers and conduits, but did not apparently reach a system. Sometimes they spanned a space of twenty feet, and were made of the usual wedge-shaped voussoirs and capped with a keystone. An Assyrian original of the Ionic capital was used by the Etruscans. In many cases rudimentary domes and vaults were employed, but without a clear perception of their importance. Etruscan temples were square or nearly so, while Grecian temples were rectangular. The Etruscans furnished the Romans with the Tuscan column or order, though under the latter it was changed and improved. The Etruscan tombs were cut out of the solid rock, and had flat or sloping roofs like gables. In all cases wooden originals were imitated.

Roman building taste received its initial impulse from the art-loving Etruscans, but was greatly influenced by constructive designs from all the older nations. The spoils of the world and the aggregated artistic sense of many peoples of widely different type of mind were combined with too much haste and too little study to give true art a fitting recognition or observance. The jumbled architecture of the Romans represents their impatience, their indifference to study and care, their hollowness, their insane haste for change and wealth, their political ambition—all done with a rush for power and glory, with a disregard for perfect details, but with a brilliance and a grandeur never exceeded. They were wholesale borrowers of types, styles, ideas, materials—never stopping to realize their individual beauty, but uniting all into an incongruous whole, though on such a gigantic scale and with such a display of wealth and power as to stagger the succeeding centuries. But true art with them was as often missed as hit. Still their numerous inventions and combinations had a marked effect upon the architecture of the earth. Instead of defining and simplifying the noble elements of constructive

architecture they rushed with less art to an excess in adornment, mass and grandeur. Dissimilar building types, possessing few if any harmonies, were combined on a scale of such magnificence, with such a lavish display of adventitious adornment, as to produce bewildering results. They did not, like the Greeks, ennoble all they touched, neither did they impress upon the world many fresh types of pure art; but nevertheless there is much to excite wonder, kindle enthusiasm and enrich the treasures of architecture in the extraordinary ruins of Rome. They had no time amid their heroic pastimes and bloody conquests to invent fresh, pure ornamental types of structure, but with ruinous despatch seized the templar designs of Asia and Greece, and first placed one upon another, and then embellished them with a grand profusion of beautiful details. The Greeks, with truer artistic sense, had first perfected their structural types from Doric designs and then had glorified them with a most enchanting simplicity of select adornment.

Perhaps the most distinguishing characteristic of Roman architecture is the combination of simple and distinct members into a complex or compound whole. Many of these have been used by the architects of all the nations since, including the United States. These complex features may be seen throughout Chicago in thousands of buildings and will be recognized when indicated. The Roman architectural period was essentially one of development—the infancy of a perfected complexity, if the statement may be allowed. The subsequent Christian orders carried complex forms and adornments to the limits of excess. The Roman combinations and multiplications of special ideas show the evolution of building designs from the simple Egyptian and Grecian types to the compound styles of Christian architecture and reveal the origin of the intricate plans of Chicago architects. It may be truthfully said in general of the styles used in Chicago, excepting ecclesiastical architecture, that the principal complex features came from the Romans. If this be borne in mind what follows will be more readily understood.

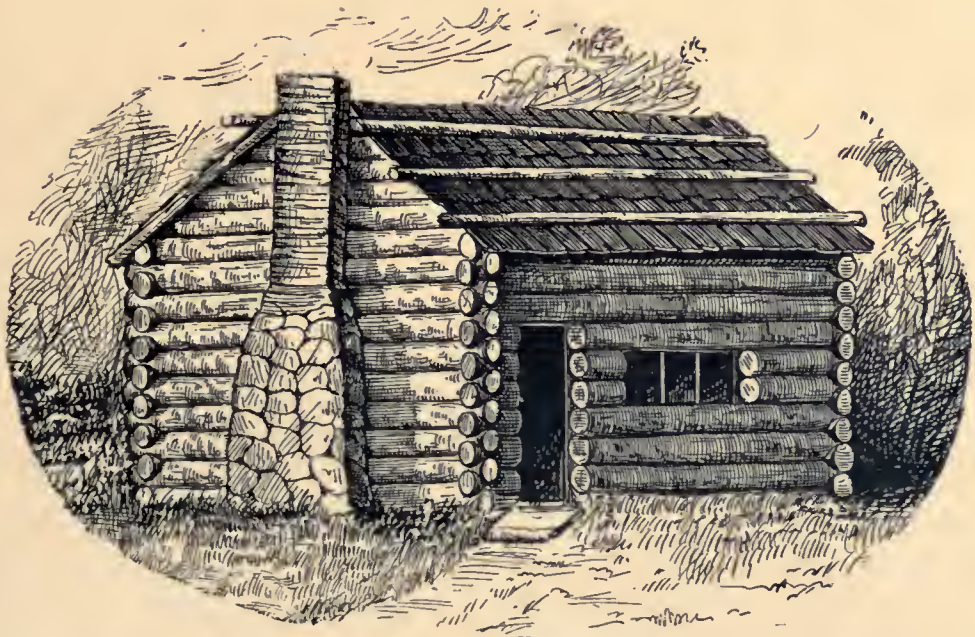
The Romans devised the important decorative arrangement of the Grecian screen of two columns supporting an entablature before the Etruscan arch supported by square piers. This feature has been used extensively by all nations since, but has no structural importance. Among the Romans the column was used more as a decorative member; among the Greeks it was a structural necessity. Accordingly the former people used the plain Doric and Ionic orders sparingly, but brought the Corinthian order into greater prominence and perfection owing to its superior decorative effect. They increased the size of the column, did not always flute the shaft, enlarged the volutes and constructed the capital after an invariable model. The moldings of the Roman columnar construction were unlike those of the Greeks; they were stiff, studied and regular, and had no meaning except adornment. The columns were placed on pedestals, while the Greeks placed them directly on the foundations. Half columns were often used by the Romans. They devised the Tuscan order from an Etruscan original, but gave it the triglyphs and other features of the Greek Doric order. The shaft was slender and the base had the plinth, torus, fillet and apophyge. Roman columnar construction was essentially the blending of the Grecian and Etruscan styles or orders.

They replaced the Grecian expression of simplicity of style with a magnificent complexity of proportion and dimension. The composite arcade of the Grecian screen before the Etruscan arch met with many alterations late in the Roman period or early in the Romanesque. The piers and pedestals disappeared; the columns were placed under the arch; over the arcade was extended the entablature; the members of the entablature were often separated; some were omitted; sometimes the entablature was curved to form the arch; sometimes the architrave was reduced to an impost upon which rested the arched frieze and cornice; sometimes the arch was concealed and placed above the entablature to sustain the superincumbent weight. All these were Roman or Romanesque devices, and show a daring, adventurous skill, a brave departure from fixed types and a transitional stage of such brilliance and promise that only wonderful results could be expected. The Roman period was the infancy of what may be called compound architecture, and the Romanesque was its youth and early manhood.

They made a great advance in utility by enlarging the cella and diminishing the peristyle. This arrangement, by making it necessary to cover greater space with a roof, led them to the use of the vault in arching and the advance to the dome was then an easy accomplishment. They also devised the apse and the apse arch, for within this space the *questor* or *magistrate* sat to administer justice. This building was their famous *basilica*—a three or five-aisled structure with an apse at one end and porticoes at the other or on the sides. In many cases, except on the portico, the columns were attached to the walls of the cella, thus bringing out prominently the importance of the latter member. This style was called *peripteral*. Sometimes a *rotunda* or circular cella was entirely surrounded with a peristyle either free or attached, and sometimes the cella itself was made octagonal and the columns were replaced with pillars, pilasters and piers, with or without pedestals.

The Romans took their temples of rectangular plan from Greece, though the idea came from the Egyptians. They adopted the Grecian gable or pediment, which was also a distinguishing feature among the Pelasgians and Etruscans, who seem to have made the first great advance in those members, but the Romans increased the pitch of the roof. The Egyptians and the Greeks used the rectangular designs, while the Asiatics, of whom the Etruscans were a prominent branch, furnished square plans with a portico on but one side. The Romans united the principal ideas of the two plans—the Grecian rectangle with the Etruscan portico, but this they afterward elaborated. They carried complexity still farther by attaching the Grecian or Etruscan portico to the circular ground plan or *rotunda* used by the latter people in the construction of tombs. Their amphitheatres and theatres were elliptical.

The arch constituted the greatest expressive feature of Roman architecture; it was structural with them, while the column was decorative. The idea of curvature taken from the arch was extended to the vaulting of halls, to domes, to circular ground plans, to intersecting vaults and applied to all kinds of structures—temples, tombs, palaces, residences, theatres, amphitheatres, basilicas, baths, commemorative structures, bridges, gates, etc. Through all is seen the semicircular arch in every conceivable relation. The Romans must be given credit for this most important improvement; it was an advance which has left a



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marked effect upon the architecture of all periods since. It is this invention of complex relationship which enabled the Romans to erect buildings so wonderful in their variety and amazing in their grandeur.

Another important advance of the Romans was the idea of the reduplication of parts, as arch over arch, column over column, etc. Perhaps the greatest defect of their architecture was the incongruous use of the perfect orders of the Greeks and the jumbled or heterogeneous association of dissimilar building members. This is illustrated in their origination of the Composite order from the Ionic and Corinthian orders; the principal elements, the Ionic volutes and the Corinthian bell with its acanthus leaves, were placed together without either harmony of outline or æsthetic expression.

Both Greeks and Romans built numerous large and costly theatres, the general arrangement of which is imitated today. The Romans surpassed all others of the ancient nations, Egypt alone excepted, in the mass of their structures. Their amphitheatres were simply titanic, and here it was that the carpentry of Rome had free range upon the seats, domes, stairways and framework. This aggressive and warlike people, glowing with the ardor of conquest and victory, representing a savage, cruel civilization, took little interest in the mimic representations of civil or domestic life on the stage, when, in the amphitheatres, in the presence of thousands of inflamed and yelling people, actual and brutal butcheries and barbarities could be witnessed.

The distinguishing features, then, of Roman architecture may be summed up as follows: The extensive use of the semicircular arch to all kinds of structures and its elaboration into domes, vaults and circular designs; the application of the Greek screen as an ornamental member only; the juxtaposition of inharmonious members; the reduplication of special parts; the enlargement of the domed nave or atrium and the invention of the apse; reticulated masonry; wealth of adornment and structural massiveness; multiplicity of constructional designs; the debasement of the Greek, Doric and Ionic orders; the improvement of the Corinthian order and the invention of the Tuscan; the studied, regular form of the moldings; the frequent use of pedestals and half columns; the excessive ornamentation of the entablatures; the extensive use of the portico instead of the surrounding row of columns or peristyle; a row of half columns on the sides of the cellas instead of the Greek peripteral style; temples entirely surrounded by a colonnade or peristyle; the steep pitch of the pedimental angle; the evolution of the columnar arcade; the use of projecting pilasters with base, fluted shaft and capital, instead of the Grecian antæ; the columnar construction of the attic story; arched windows and doors; love of the magnificent instead of the beautiful; elaborate band-courses which encircled huge buildings between stories; the collection of arch thrusts to a point, to be received by a buttress; the use of ornamental vaulting shafts; the fault of such an enlargement of special members as to dwarf the whole structure; the use of three or four-story piers and of battlemented walls; the variety of uses to which wood was applied; the immense quantity of brick and stucco used; the technical perfection of masonry and carpentry and the origin of the historic basilica.

There is no arbitrary line separating Roman architecture from its descendant Romanesque, as the evolution was gradual after the time of the Christian era, and the first period of the new style complete about the time of Constantine. The term Romanesque is here applied to any deduction of the pure Roman styles by any people, which do not have an admixture from other types. It originated from the attempts of the Christians, to derive a suitable building for their wants from the classical orders and the special Roman members, and was continued in Western Europe until the thirteenth century, though not without great improvement and variation, and the adoption of a few of the characteristic Gothic features, as early as three or four centuries before. In fact, innovative forms began to creep in as early as the middle of the sixth century. Under this classification Byzantine, Saxon, Lombardic, Norman, Pisan, Milanese, etc., must be considered variations of the Romanesque, for these styles certainly originated from an imitation of Roman types. Byzantine was the earliest to show its characteristics. Soon after the destruction of Jerusalem by Titus, lines of demarkation from the Roman were drawn at Byzantine or Constantinople; but it was not until the reign of Constantine, that the style assumed its permanent form and garb. In the west the fragmental nations resulting from the destruction of the Roman empire, continued to imitate its arched construction until it was fully replaced by the Gothic in the thirteenth century. But there are two distinct periods of Romanesque in the west, the first of which ended about the year 575 A. D., when Alboin the Lombard mastered Italy, and the second continued through the dark ages until supplanted by the Gothic.

Under the influence of Roman art, the western Christians, from the start, took the basilica and adopted it for their church. They spread over the central aisle, which they soon designated the nave, a gabled roof; retained the Roman altar where offerings had so often been made to the gods of justice and war; dedicated the apse to the exclusive use of their bishops and holy ceremonies; separated the nave from the dais by cancelli or pillars; formed two aisles of the interior colonnades, one for men and one for women; set apart for special use the choir; devised the famous, historic crypt; spanned the intercolumniations either with a horizontal architrave or a series of circular arches; beautified the triforium, and introduced the primary transept, which shaped their ground plans like a Tau cross and gave to later Christian Churches their cruciform designs. The gabled roofs were made of wood, and consisted of beams, ties, rafters, braces and posts, all usually left uncovered and plain, but sometimes feebly but tastefully ornamented. At the center of the transept, just in front of the apse, was established the choir, on the sides of which were located the pulpits. But the central idea was Roman, as the latter had been Grecian, Asiatic, Etruscan, or Egyptian. The form given the early Christian basilicas was dictated by necessity; the Christians were persecuted, impoverished, and, at the point of death, forced to take whatever they could get. In their earnest hands the Romanesque basilica became a germinating architectural seed, from which grew the great cathedral of mediæval times. Its expression was simple, plain, humble; but often the stately interiors were artistic and beautiful, under the influence of ennobling Christian ceremonies and sentiments. The walls were often covered with paintings, frescoes,

and sometimes mosaics, representing ideal scenes of Christian sacrifice, martyrdom, or history. Particularly was this the case in the decorations of the semi-dome of the apse, where, usually, the Savior was shown instructing his disciples, or triumphantly ascending to heaven from His tomb in Gethsemane. The columns were usually Corinthian, taken from some dismantled pagan temple; yet necessity often placed a Doric column beside an Ionic or a Corinthian. But the most striking characteristic of the early Romanesque basilica was a notable poverty of ornamental details, and a plainness of painful severity, which, doubtless, in those emotional times, greatly increased the reverential awe of the worshiper or the spectator. Brick and wood were the principal materials used; plain stone arches capped the doors and windows. These were the principal characteristics of the Romanesque style generally.

The ancient *Thermæ* gave early Christians the model for their baptisteries—circular, octagonal, quadrangular, etc.; but the same plain architecture and sober expression as seen in the basilicas were duplicated in these structures. They were placed near the basilicas, but after a time wholly disappeared and were replaced by the baptismal font.

The Early Romanesque style in circular buildings avoided all external decorations. In the first churches, a small portico, a relic of the Roman peristyle, was used, but soon disappeared. The architects rarely, if ever, tried to vault their rectangular structures, but sometimes spread domes over their circular ones, in which case the outline of the roof did not conform to the curvature of the dome. In reality, it was not a dome; it was merely a vaulted ceiling of large dimensions, covered with a wooden roof. The Romans, a century or more before the time of Constantine, gave to their roofs the same form as to their domes. This style was promptly imitated, and rapidly developed into a perfect type by the Byzantines. Romanesque architects, on the contrary, used vaults internally, over which was spread the gabled roof, which important feature had as much influence on the Gothic styles as the vaulting mania itself. Another distinguishing feature of the Romanesque was the multiplication of round arches and the introduction of arched buttresses. The architects of the basilicas soon adopted the cruciform plan, developed square piers, carrying groined arches, introduced altars at the foot of the aisles, placed half columns at the sides or beveled angles of the piers, built chapels off the choir or the narthex or vestibule, erected belfries or sancti bell cots and stone spires, and often transformed buttresses into pilasters. From the start, they employed interior columns to support the vaults or domes of their structures, while the classical or Byzantine designers used them only as ornamental features, and not at all in their circular buildings. In the Romanesque the use of the Grecian screen of two columns supporting an entablature was abandoned; but the semicircular arch was employed to span all openings, and was placed directly upon the impost of the columns. No doubt the idea of the Roman atrium was the origin of the Romanesque narthex or vestibule. The name basilica, used by the Romans, was adopted by the Christians, who admired its beautiful meaning—kingly hall. As time passed, the bema or sanctuary was merged into the transept, or lost much of its earlier importance. Generally, classical pillars, pilasters and entablatures were adopted in the Romanesque buildings. Other notable features were rectangular faces and square-edged

projections, small wall openings, massive architectural members, sculptured flat surfaces, the lack of multiplied component parts, a conspicuous predominance of horizontal lines and absence of vertical ones, flat, inconspicuous buttresses, short, one-storied pillars in the recesses and walls, terminated with strong horizontal bands, tablets or cornices. These were the principal characteristics of the Early Romanesque period in the west, until near the close of the sixth century, at which time the nations which had arisen began to dress their buildings with certain local forms, to which the terms Byzantine, Lombardic, Venetian, Tuscan, Norman, French, English, German, etc., have been very properly applied.

Late Romanesque architecture, which, under this classification, began about the beginning of the seventh century, retained many of the earlier forms until new members or designs supplanted them or the appearance of Gothic styles drove all into disuse. The basilicas of the early Christians were used without material alterations by nations both of Italian and Teutonic origin in all western Europe until about the beginning of the tenth century, when important improvements in old forms were made, rather than the substitution of new ones. France was the leader of new architectural developments in the west. Teutonic and neo-Celtic elements began to appear early in the tenth century, but the Romanesque did not yield without a struggle; in fact, it even enjoyed a brief renaissance late in the twelfth and early in the thirteenth century, after which it speedily gave way to Gothic forms.

One of the first changes was the increase in size and importance of the transept and the prolongation of the nave. The altar was removed to the east side of the choir, and over the intersection of the transept and the nave a tower was erected. The transept wings were given the same width as the nave, which was itself double the width of the aisles; the apse was raised higher and often another was built on the west end of the church. Late in the eleventh century the vaulted basilica succeeded the flat or gable-roofed basilica, but did not assume the form of the Byzantine dome. These changes led promptly to striking results. Molded piers as high as the nave walls took the place of pillars or columns to support the nave vaults or arches. This extension of vertical lines was a Gothic innovation. Cross vaults were soon in general use, and rib moldings soon gave a livelier aspect to the broad vault expanse. The projection of arches from the vault faces increased the vertical effect. The aisles were similarly vaulted, and a little later the tower over the junction of the nave and the transept assumed the form of a polygonal dome, a slight recognition of the conquest of Byzantine art. Perhaps the most striking general feature at this time was the clear and evident system of the vaulting; it had become an expressive organic whole, an attractive transformation, a harmony of curved lines, rounded forms and dressed angles. The semicircular arch was extensively used and was often stilted. A little later the early pointed or the foliated arch could occasionally be seen endeavoring to crowd out the semicircle. Another important change was the increase of intercolumniation—the distance between pillars and piers having been placed at half the width of the nave. Soon piers and columns were used alternately with strong and beautiful effect. Piers were first plain, quadrangular or octagonal, but soon half columns were set in the recessed corners or on the sides, or double or triple

half columns on both the angles and the sides gave a richly molded effect to the whole pier. This became one of the most distinguishing of the special members at this time. Moldings began to adorn the groins, ribs and even intrados, and, altogether, a richer dress lent increasing beauty to the great expanse of walls and vaults. Around all entrances moldings multiplied rapidly, door and window jambs became doubly or triply recessed to receive rounded shafts, and over the arches ran a continuous architrave of fillets, grooves and rounds. Sculptures, grotesques, symbols and coats of arms appeared on the eusps, spandrels and angles. The first rose window—a circle foliated like a wheel—became an important advance in the eleventh century. The towers were usually small, and square, octagonal or circular without a long spire. Groups of round-arched, narrow, stilted windows were soon used in all variations of the Late Romanesque. Over the grouped windows, which were recessed, appeared multiple half-projecting arches on the walls. Later, this became such a distinguishing feature that it was elaborated and called pilaster strips. Sometimes two towers were built on the west end of the church, and over the nave and transept intersection a hexagonal or octagonal tower with low concave roof rose.

Enrichments from the animal and the vegetable kingdoms—masks, dragons, men, fabulous beasts, flowers, stalks, leaves—were carved on capitals, spandrels, etc. This was undoubtedly an imitation of the Byzantine style, which reveled in this class of decorations. The cubiform capital so extensively and variously used in the Late Romanesque was borrowed from the Byzantine. It was not long till it took the bell shape in order to give full play to the wonderful profusion of carvings on the capital. The abacus became higher though less projecting than in the Early Romanesque, and exhibited repeated alternate fillets and cavetti. The base of the column was invariably a modification of the old attic base with its quadrangular plinth, but the corners were rounded with carved foliage or animal heads. The shafts were given no entasis, but all had the astragal and very often a broad molding ran round the clustered shafts. The shaft flutings were of all shapes, sizes, angles and directions. The band courses, cornices, etc., used were in the main Roman, but the fillets and rounds were differently combined. Colored glass began to be used in the windows in the eleventh century. Late in this style the special moldings or ornaments used were the tooth, billet, chessboard, scallop, eable, nail-head, lozenge, zigzag, grotesque, corbels, pilaster strips, blind arcades, arcade galleries, corbel-tables, masks, faces, foliage, etc. The general effect of Late Romanesque architecture was repose, beauty and solemnity. The interior was well proportioned and the expression lofty and grand. In Late Romanesque, when circular churches were used, a dome supported by a range of pillars rose over the choir. Cloisters with vaulted passages and castles with Roman battlements supported by corbels united by arcades were to be seen. These were the principal features of Late Romanesque in general, but special forms in the several countries remain to be noticed.

The forms of Early Romanesque architecture in Italy did not yield so readily to Gothic innovations as in other nations. Its features were similar to Romanesque in general. The old basilicas were used until early in the thirteenth century without material alteration. The

choir was raised above the nave, to which it was connected by a flight of steps, but the transept did not appear till late. Pillars were alternated with piers to support the nave roof. Old Roman forms were closely imitated.

In Tuscany very often the entire faeade consisted of pilasters or half columns supporting arches or a horizontal entablature, rising story above story to the roof. Exterior and interior were richly dressed in layers of white, black and green marble. Even the faeade, and the walls were inlaid with marble of various colors, producing a decorative effect of wonderful richness and beauty. Oval domes rose over the choir. The eorbel-table did not appear. Columnar shafts were twisted and cabled and capitals were richly but fantastically eurved. The entablatures were beautified with colored mosaics in figured patterns. This was late in the style. Tabernacles and canopies were built over altars in the twelfth century; they consisted of columns holding an architrave and a frieze formed of a row of small shafts supporting a cornice. The ambos were dressed in costly mosaics.

The Venetian Romanesque could not resist the invasion of Byzantine and Arabian forms and features. However, the Early Romanesque basilicas were retained, though the Greek cross was often used for a ground plan. Sometimes as many as five domes rose over the structures. This was strongly Byzantine. Galleries were built over the piers supporting the domes. Mosaics of wonderful beauty covered the floors, pillars and walls. Often the lower part of walls was cased with colored marble slabs and the upper part inlaid with colored marble mosaics on a gold ground. The effect was enchantment. Columns of the Greek order and marble slabs were taken from the old temples and used extensively. In the middle of the faeades open spaces were frequently left, around which Byzantine pillars, in several stories, supported semicircular arches with straight or prolonged haunches.

The Lombard Romanesque style abandoned the early Christian types and adopted the basilica. The faeade exhibited the distinct feature of compactness, and terminated in a gable instead of a high center and low sides. Small, long arcade galleries ran round under the gabled roof, or round the dome and choirs, or decorated the faeade above the porch or elsewhere. Tall outside pilasters marked the division into nave and aisles. These arcades became a characteristic feature. Sometimes the arcades were connected by pilaster strips. Often on the west front a large rose window appeared, a distinguishing feature of the Lombard style. Over the main and side portals were columns supporting baldachin arches and forming porches, above which were covered balconies; the columns rested upon the backs of lions crouching upon pedestals. The towers were separated from the basilicas, but stood near them. Octagonal baptisteries and towers were arcaded externally and internally. Upper Italy early showed Gothic innovations in its ornamentation of grotesque animals and in the perpendicular side-faces of its capitals.

Norman Romanesque in Lower Italy and Sicily early showed a combination of Arabian, Roman, Byzantine and Norman members. In some basilicas the dome was erected over the choir, as in the Early Romanesque, but in others stood on four pillars at the center of the

ground plan of a Greek cross, as in the Byzantine. Arches were not molded, had no structural connection with the pillars and were stilted by means of perpendicular haunches. The exterior was embellished with columns, half columns, pilasters, alternate layers of light and dark stone, intersecting arches and very beautiful mosaics in Arabian and geometrical patterns. On the interior there was a profusion of rich gilding, shafts, easings of colored marble, real and fanciful figures in mosaics and Byzantine and Arabian details. At the west end were two towers, between which was the portico containing the main entrance. This was a Norman feature.

The Late Romanesque of France had all the features of the Late Romanesque in general, together with a few important alterations. In the South, Roman ornamentation and peculiar moldings were closely followed. Finally, the ground plan of the Early Romanesque basilica was adopted with some modifications. The Roman barrel vault became a most prominent member in both nave and aisles in all the structures. The nave vaults and the transverse arches between them were set on piers. The cube-shaped capital was avoided, while figured Corinthian capitals prevailed. Cornices were set on corbels, external galleries were omitted and arcades were rarely used. The distinguishing features were the interior constructional designs, the rich dressings of the facades, the multiplied ornamentation of the doorways and the use of many designs of fantastic sculpture.

The Norman Romanesque of France became, perhaps, the most important of the Late Romanesque special styles. Generally, Roman forms were imitated, but details were vastly increased. Piers and arches were extensively molded, ground plans took the shape of the Latin cross, apses became rectangular, aisles and naves were cross-vaulted and sustained by square piers upon the corners of which were cut half columns. Rich yet simple ornamentation of billets and the various moldings—zigzag, lozenge, nail-head, chessboard, etc., lent all an attractive appearance. Cubical capitals sloping underneath and cornices supported by corbels without arcades distinguished this style. Sculptured ornamentation was rough, mechanical and grotesque. On the west end two square towers with narrow windows and niches, and short octagonal spires with four smaller spires at the corners, rose over the facade. Rows of windows divided the facade into stories. In this particular the facade was much like that of the Lombard, though in the latter the towers were missing.

Norman Romanesque in England was characterized by the richness, variety and happy effect of its moldings. One over another appeared on the arches to the number often of a dozen, but all came from the Late Romanesque style in general. The piers were heavy, and circular or octagonal, often alternating with columns, as in the Early Romanesque basilicas. The capitals were curiously molded, a very distinguishing feature. The naves were not vaulted but were roofed, and the ceilings were painted, gilded, etc. Over the aisles a gallery was built and sometimes the main arches inclosed minor arches. The entire design, particularly the choir, was made narrower and longer, and the apse terminated in right angles. The characteristic diamond and scale enrichments covered the walls. The arches were highly

ornamented with moldings, the most conspicuous being zigzag. The shafts were spirally fluted or carved with reticulated, lozenge or beaded zigzag molding, diagonal lines predominating. The style was heavy and massive and had less old Roman and more Saxon elements than any other variety of Late Romanesque. Tapering buttresses separated the small round-arched windows. A quadrangular tower rose over the center of the structures. Narrow, blind arcades, often interlacing, with one range above another, lent a cheerful aspect to the facades.

Late Romanesque, in Germany, under Saxon influences, took on peculiar forms as early as the tenth century. The early Christian basilicas were used until the eleventh century before vaulted basilicas succeeded them. Large arches resting on piers and running up to the architrave, took the place of the mass of masonry above the piers, dividing the nave and the aisles. Columns arose between the massive piers, to support small arches, which in turn sustained the large pier arches. Round, octagonal or quadrangular towers were placed at the end, or ends, of the basilicas; this distinguished the German from the early Christian. Generally all imitations of special Roman members exhibited higher art than earlier specimens. In Saxony the choir was elevated, the nave and transept each prolonged, and a crypt placed underneath, and on the west a vestibule was built and surmounted with an arcade gallery. Piers divided the aisles from the nave, and the intercolumniation equaled the width of the nave. Cubical capitals were used almost exclusively, enriched with leaves. Along the Rhine the alternation of piers and columns rarely occurred, and wooden roofs abounded, but all the Rhenish basilicas were vaulted. Cross-vaulting occurred on aisles and nave, supported by four-angled piers. Archivolts rose from the half-columns attached to piers; the latter were simple or clustered. The walls were bare and ornamentation poor, but a rugged strength was strongly expressed. Externally, pilaster strips and half-columns abounded. The Rhenish basilicas had small arcades outside, supported by pillars running up to the eave moldings, similar to those in Tuscany and Lombardy. A little later vaulted basilicas appeared, and galleries were built over the arcades. The style was strong and picturesque, particularly in the cloisters and castles, where the facades were arcaded and the doors and windows often heavily molded. Occasionally the pointed arch was found, introducing the Gothic style.

It is now quite certain that the Byzantine style began to assume its characteristic features nearly as far back as the destruction of Jerusalem, by Titus; but it did not reach a strong expression until, in the reign of Constantine, the church of St. Sophia, at Constantinople, was built. Later, this church was burned, but was immediately rebuilt by Justinian, with a degree of artistic expression and decorative splendor surpassed by but few structures ever erected by man. Unquestionably, the Byzantine style was the first to reach completion out of the cosmopolitan architecture of the Romans. The latter people, when their empire went down in ruin and desolation, were on the point of establishing the dome as the central idea of their architecture. They had perfected the arch, had introduced the vault and had even been permitted to build the dome of the Pantheon. But before this critical stage, their empire was

rent asunder by the barbarians of Northern Europe. The Eastern Empire, with capital at Byzantium or Constantinople, took up the work left by the Romans, and enlarged, perfected and segregated it into a permanent and beautiful type, the chief feature of which was the vault or dome. Four huge piers, sustaining wide arches, over which rose the great dome, covering the central space and vaulted side-aisles or spaces, characterized the style. Columns were made subordinate; the construction of the vaults influenced the entire structure. Among the Byzantines, also, the principle of the collection of arch-thrusts to a point was fully perfected. They carried it far beyond the Romans by buttresses and counterpoises. Projecting cornices were either abandoned or made flat and tame; in fact, the entire idea of Roman decoration was given up. Columns and capitals lost their great significance. Curvature was seen everywhere. Ground plans often took the curvilinear form; in other instances they were octagonal or oblong, but always sustained a huge dome over the center. On the sides or ends of the domed central space were semi-domes, and to these were often attached smaller semi-domes, through the medium of barrel-vaults. The apse was retained, and the side aisles were given two stories. The walls, piers and floors were inlaid with stones of the richest colors, and the vaults or domes were enriched with intricate mosaics on a ground of gold. The columns were of costly marble, and the nave was lighted by windows in the domes, arranged with such skill and taste as to exhibit the marvelous colorings and forms of the interior with the most striking and impressive effect. The general result was the prominence of the central part of the church or the great dome space and its loftiness, while in the Roman basilicas, the comparative importance of all parts and the longitudinal effect were conspicuous. The huge central dome was the leading feature, to which all others were subjected and made tributary. The domes, externally, were uncovered by roofs. The principal one sprang from a square support, and round it, externally, ran a gallery. Another ground plan which became common was shaped like a Greek cross, and the vault system was extended to five domes, neither one of which was so much larger than the others as to be called central. One dome rose over the center, and one over each of the four wings. The front had a narthex. Later, the domes of the Byzantine style assumed the hemispherical shape, instead of the flat-vaulted outline.

The vault windows pierced both the external wall and the vault, giving the jambs an irregular surface and originating the drum. Domes, vaults and cross-vaults were left uncovered externally. Aside from the domes, the roofs were plain slopes at first, but were rounded later. The exterior was simple and grand; the interior rich, elaborate, and very beautiful. Arabesques, mosaics, and Arabian geometrical patterns of glass, marble or precious stones in harmonious colors beautified walls and piers. The use of mosaics led to the origin of a distinct local style. The Romans associated the vaults and the Grecian columns; the Byzantines disassociated them, and perfected the vault or dome. The Grecian architrave could not be used by the Byzantines, who also abandoned the classical column. They often used a strong support between the abacus and the arch springer, which became a peculiarity of the style. Cubical capitals covered with incised or carved foliage prevailed. The apparent love of

splendor and gaudy decoration recalls the lavish, florid architecture of the Euphrates valley long before the Christian era. All ornamentations were rougher, less artistic and pure than in Greek and Roman types. Byzantine architectural members found their way into the west—Italy, Germany and elsewhere. The style had several variations—Russian, Arabian, Saracenic, Spanish, Indian, etc.

In Russia the style was much changed late in the fifteenth century by the adoption of the Tartar bulb-dome, and many fantastic, inartistic forms. The bulb-domes were invariably larger than the drums of the superstructure supporting them. Often they took a curve of inverse flexure at the top, terminating in a point. Many of such domes on tall drums rose over the structures in systematic designs, usually in groups around a larger central bulb and drum. The groups always decreased in size from the central one. Over all was spread a rich, gaudy coloring of yellow, red, and white, or, on the domes, blue with gold stars. Excepting with pilasters, the exterior of walls were unornamented. The windows were small and arched with semicircles. Another important feature of Russian-Byzantine was the use of the hip roof to support a system of tall drums carrying bulb-domes. Lofty piers, either circular or angular, on the interior, supported the domes. Sculpture was not used. An iconostasis was used to separate the altar from the congregation. The churches had bell towers, usually square or octagonal at the base, but becoming round at the top.

Arabian-Byzantine generally was stamped with its peculiarities. Its exterior was plain, while its interior was richly decorated. The arbitrary conjunction of building members injured the harmonious union of the whole and destroyed the effect of strength and system. The principal and almost the only ornamentation was that of flat surfaces, while the style in general was distinguished by the pointed arch used for decorative effect. Caprice, contrast and versatility, seemed to have been the handmaids of the Arabian architects, and arbitrary results their object. Arabesques, horseshoe arches, looped vaults, and varied colorings mark the style.

The Saracens and Arabians based their architecture on the Byzantine basilicas, but made important variations during the seventh century. The mosque and minaret became notable architectural objects. The mosque took two forms—one a large rectangle of walls without a roof, surrounded on the interior with arcades and planted with trees, enclosing a well covered by a cupola, and the other modeled after the Byzantine domed basilicas, having vaultings and arcades; minarets were added, often from two to six at each corner. In all this architecture mingled Byzantine plans and Indian details were clearly recognizable. Walls and minarets were battlemented and pierced with portals and embrasures. Interior decoration was rich and gaudy. Columns were sometimes short and heavy, at other times tall and slender. The arch for windows was early used by the Arabians. In Egypt and Sicily the style was low pointed, in Persia and India keel-shaped, and in Spain the horseshoe, but the use of pointed arches was arbitrary instead of systematic. The walls were covered with arabesques, which have been extensively imitated in Chicago for a number of years. They were low relief in

stucco or rich painting. The roofs were either straight slopes or vaults, the latter possessing the marked feature of small recesses or diminutive domes rising one above another until terminated by a complete inner vault at the top. This feature was very striking and was the most noticeable special member of the style. They were of wood or plaster. The domes externally were flat and plain and semicircular or pointed.

Spanish-Byzantine was a direct descendant of the Byzantine style, but came through the Arabians about 755 A. D., and had their distinguishing elements. As its form was richer and its varied beauty more attractive, the Roman forms were mainly driven out, though some of the simpler features were long retained. The horseshoe arch was used extravagantly—was a characteristic member. Slightly pointed arches, recessed with smaller arches, were used early, but not with any apparent system until later. In the twelfth century the Moors conquered the country, and soon fresh innovations in former styles were to be seen. In a short time the various architectural elements were united or fused into a type of decided beauty and unique form. Spain was the wonder of the world in the fourteenth century. Its architecture was extremely rich and peculiar. The Alhambra, from many points of view, has never been surpassed. The people were romantic, full of emotional impulses, and their architecture, to correspond, assumed a garb of intricate fairy forms and harmonious colors. Decorations were exquisite and unique. The capitals were cubical with rounded lower corners and decorations of leaves. The columns were long and slender. A rectangular slab on the capital held the stilted arch. Stucco decorations enriched the arch soffits. Interlaced and filigree work covered walls, shafts and arches. The lower part of walls was inlaid with a choice mosaic of richly glazed tiles. The domes were often multiple, composed of many small segmental domes, united into an arched symmetrical whole. Broad, beautiful friezes and panels ran round the walls. While the plans were intricate and multiple, the general effect was unity and harmony. The complexity was really systematic.

In India the Arabian styles took on certain special forms and features in the mosques, palaces and mausoleums. At Agra, particularly, wonderful buildings were erected. The Tartar races exhibited great technic skill and peculiar artistic genius. In the sixteenth century a clear type was evolved. The walls were divided both horizontally and vertically, and the domes were often spherical, and battlemented bands of pointed, oval-shaped leaves were numerous. Simple-pointed and keel arches covered the openings. Round or octagonal towers rose at the corners of the quadrangular structures. Square, heavy piers invariably carried the arches. Mosaics and arabesques abounded.

Indian architecture, shown in their rock-cut tombs and erected edifices, reveals a few familiar and many interesting features. The cave temples of the Brahmins were open in front and consisted of a large space covered with a flat roof or ceiling supported by columns or piers, the front row forming the facade. Later temples had no open exterior. Globular and flat surfaces abounded, and large animals, particularly lions and elephants, were used as supports and guards, or engraved on a smaller scale on capitals and friezes. Colossi, used with telling

effect, lined the walls. The piers or columns were peculiar, and, as they have begun to make their appearance in Chicago, should be fixed in the mind. Generally they were very massive, so much so as to appear too short or squatty. The base was usually quadrangular, though often octagonal, and was higher than it was wide. Upon this rested a short, circular, bellied shaft at the top of which was a deep prolonged necking, graced with astragals above and below. Surmounting the shaft was a capital, shaped like a flattened or crushed sphere, around the center of which ran a strong astragal, and over which was a quadrangular abacus, usually carved at the corners. The entire shaft and capital were almost always fluted and in places engraved with stalky foliage and animals. Sometimes the capitals were cubes ornamented with rams' horns or scrolls. In the Buddhist temples the columns were slenderer and did not appear so squatty. The architecture as a whole was massive with gigantic carvings and symbolic representations. In the early Indian style there were many right-angled projections; but later a general design of rounded points and angles was manifest. This general rounding of architectural members was also a characteristic of the Late Romanesque, and its application may be seen on the exterior of the Rookery. The Indian pagodas came down from the remotest antiquity. Often they were large and impressive structures. A large wall inclosing several courts, at the corners of which were towers, was the type. Often huge pyramids rose over the entrances. Colonnades, halls, shrines, walls, passages, fountains and temples appeared on the interior. The ornamentation was symbolic, excessive, tasteless and fantastic. Gigantic and hideous idols were to be seen in the temples. Curved roofs were common. In general, massive members, pyramidal designs, arbitrary outlines and details, rounded forms and squatty columns characterized the Indian style.

The Gothic or Pointed style is generic, and embraces many variations and striking characteristics. It grew up in western Europe late in the dark ages, and was designed to supplant those styles which imitated the Roman forms or members. The term Gothic, referring to its origin among the barbarians, was given it by Palladio about the middle of the sixteenth century and was one of reproach, which has clung to it, in spite of all opposition, to the present day. The earliest changes were perceptible in the eleventh century. The pointed arch, so far as now known, was first used by the Assyrians in their aqueducts and elsewhere. It was also known to the Egyptians, to the Pelasgians and Etruscans, and later to the Greeks and Romans; but was used arbitrarily or without system, and infrequently. It is also true that the Arabs were the first to apply the pointed arch to structural uses; but they failed to give it system, though they improved it and used two styles—the low pointed and the keel, and no doubt gave the Normans, who made the first great advances in the new style, their original impulse in the direction of Gothic peculiarities. The innovations of prolonged vertical members in the Romanesque, while perhaps foretelling the coming change, were not used with such system or with such frequency as to found a permanent departure in favor of the new style. They were simply arbitrary variations of the Romanesque.

The general principles of Gothic will first be noticed, and then the peculiarities of different periods and nations. The pointed arch in all its many variations was one of the most dis-

tinguishing features. The systematic proportion of interior spaces, instead of members as in the classical styles, was another. On the exterior, horizontal lines, bands and members were mainly avoided and in all cases made subordinate to vertical effects. Columns, piers, towers, buttresses, bays, and numerous slender inventions pushed upward like vegetable growths, until terminated by spires, pinnacles, finials, crockets and sharp gables. On the interior the intersection of vaults led to the invention of molded ribs to support them. Soon the transverse and diagonal ribs were so multiplied as to become the most conspicuous object of the vaults. They were spread out from a point of union like a fan, and the intermediate vault spaces or ogives were often reduced to a minimum. On the richly molded ribs, cusps, bosses and other ornaments appeared. The ornamentation was peculiar and characteristic, and consisted of the two essential elements—geometrical figures and vegetable forms, arranged to increase the rising effect. The moldings, also, were as characteristic as any other feature, and were known by their outlines. Generally they consisted of convex members alternated with deep bottoms, and showed sharp contrasts of light and shade. The narrow rectangle took the place of the four-square bay for all purposes of cross-vaulting, by which substitution the entire superincumbent weight was placed upon the transverse ribs, diagonal ribs and pier arches. This division of arch-thrusts and their distribution to many points led to the frequent use of heavy buttresses and to the invention of the flying buttress. The use of numerous heavy buttresses reduced to in consequence the exterior intervening spaces, and brought out in strong relief all angular and projecting members. The frequency of rectangular, instead of square, interior spaces, gave a narrower and higher effect than in Romanesque churches. The detached piers were richly molded vertically, and clustered columns or piers abounded. The ornamentation of the capitals with leaves of the oak, ivy, hazel, beech, grape, marshmallow, whitethorn, thistle, etc., was made subordinate to the glory of the rib vaulting. The abacus was light, sharply molded and angular. Later, diagonal ribs were groined and greatly increased in number and in rich molding, which led to an increase of cusps, bosses and heraldic ornaments. The buttresses were divided into stages which were crowned with gablets or small pyramidal towers. The interior mural spaces between the buttresses were devoted to windows and other openings, and the intrados of the vaults to panelling. The tracery of the windows marks the styles of the Gothic. The decorations of gallery, triforium, parapet, gable, door or mural spaces assumed the lines of window tracery to harmonize ornamental effects. The doorways were recessed by stages deeply molded, and later a vertical shaft divided them, and the jambs and spandrels were ornamented with religious ceremonial scenes, and over the drip stone rose a narrow, pointed gable, richly dressed with bosses, buds and finials. Oriel windows made their appearance as an architectural member. Window frames were richly molded and often gabled. Rose windows became marvels of intricate tracery and harmonious colors. Through the maze of pointed windows, doorways, buttresses, pinnacles, turrets, gablets, ornamented and enriched with crockets, bosses and finials, rose the huge sharp roof of the main structure, enveloped in a multitude of similar ornaments. Under the roof were heavy moldings, often interrupted to render predominant the vertical effect. The towers and facades became

wonders of mazy ornamentation. Porches rose over the central doorways. The entire facade with its cloud-touching spires, its porches and richly molded windows and doorways, its buttresses, canopies and gablets, its tracery and ornamentation, formed an organic whole of striking beauty and grandeur. A small tower rose over the nave and transept intersection, graced with pinnacles and gables. The crypts were gone, the choir was lowered, the apse became polygonal, but the nave, aisles and transepts remained. A most striking effect of a Gothic cathedral was the lively, springing formation of the structure as a whole. The interior and exterior together, constituting a systematic unit, expressed in the highest degree picturesqueness, stateliness, power and sublimity. But much was done that was not necessary. Fancy played with moldings, bosses and enrichments. Tessellated pavements, rich mosaics and symbolic paintings and frescoes gave character to the vast interior. The important Gothic principle of a unity of separate parts was usually, though not always, effected. High, upright features were eagerly sought. To secure loftiness, the horizontal entablature was thrown away, and from the capitals pointed arches were thrown. Human forms and faces appeared on the corbels, brackets, spandrels and moldings. Statues rose up in niches as if imbued with life. Gargoyles and grotesques were found in out-of-the-way gutters and angles. Battlements, parapets and oillets brought up visions of mediæval castles and fortresses. These, in general, are the characteristics of the Gothic or Pointed style.

The Early Gothic which sprang up in the twelfth century, has some distinct special features. The narrow lancet window, above which appeared the first style of tracery—plate—consisting of circular openings cut in the walls between the sharp arches of groups of windows, was a distinctive character. The gable was usually an equilateral triangle. A little later the equilateral arch, the drop arch and the segmental pointed arch appeared. The capitals resembled the Norman style, but were less varied and had few, if any, incisions or carvings. Upon them, however, were bold moldings, plainly and deeply undercut, with foliage on the bell, and toothed ornaments on the rounds. The moldings usually appeared in groups or suites. If foliage were used as an ornament between the abacus and necking, the moldings were omitted. The foliage consisted of leaves, with strong, stiff stems deeply undercut, and with the stalks and most prominent parts detached. Corbel-tables, taken from the Norman, were occasionally seen; but were ornamented with trefoil arches and carved blocks, or, if the arches were omitted, with suites of moldings. The deep hollows in the moldings held carvings and flowers. Crockets sparingly appeared for the first time. Long stalks and short curled leaves were seen late in the style. Cusps were here devised with a trefoil or leaf ornament on the point. They were first used on the soffits, but later on the moldings. Diapering was introduced in this style. The moldings consisted of alternate rounds and sharp hollows, often separated by fillets. Trefoil and cinquefoil arches were conspicuous. Doorways were often divided into two by a small shaft, and had quatrefoils above them. They were recessed with shafts on the jambs and moldings of the arches. The shafts themselves were usually encircled with bands of moldings. Late in this style featherings appeared. Windows were used singly or in groups of two, three, five and seven, were tall and narrow, and over the group was another large arch, between which and the

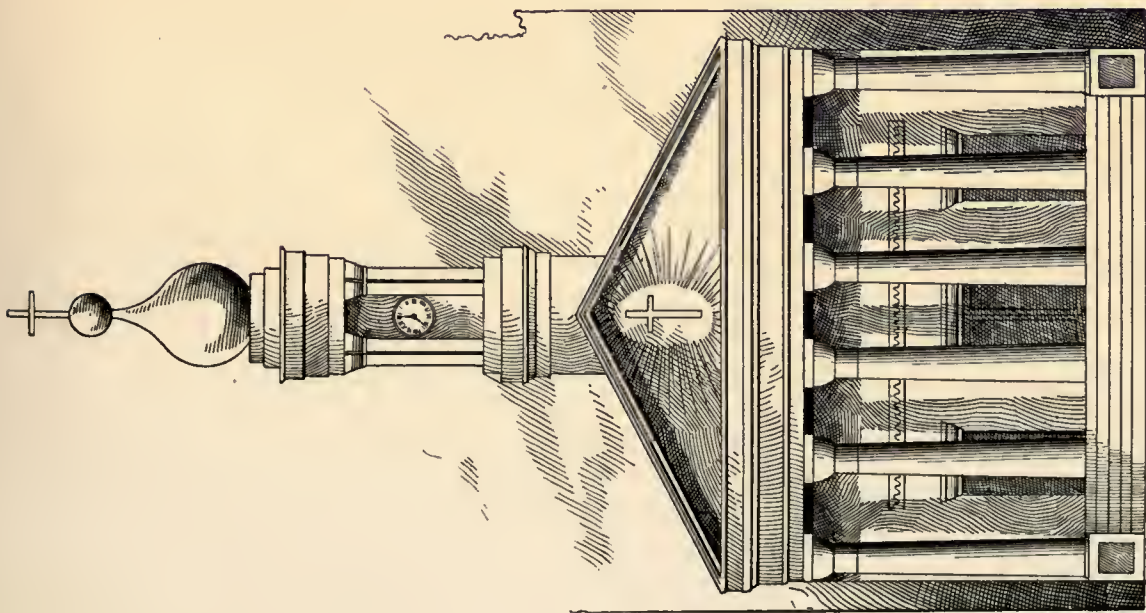
smaller ones were circles, trefoils, quatrefoils, etc. This was the origin of tracery. It was geometrical. Groined ceilings were common, but consisted simply of transverse and cross springers and main diagonals with bosses at the intersections. The pillars consisted of small circular shafts around larger circular or octagonal piers. Buttresses were strong and prominent, usually ran to the roof without stages and ended in sharp gables above the parapets. Roofs were sharply pitched compared with classical pediments. The dog-tooth ornament was used in great profusion. In rich buildings coping courses were molded. Gargoyles first appeared. Mullions became such first in this style. Canopies were also used to hold statues. Circles, trefoils, quatrefoils, cinquefoils, etc., were employed in panelling, with backs of foliage, carvings or diaperings. Pinnacle shafts were given small pediments at the top of their faces late in Early Gothic. Porches were used. Dog-tooth moldings were used in the hollows of arches. Pillars were banded or cinctured. Columnar bases resembled the Norman, but were so deeply cut that they held water; they were enriched with leaves. Bell gables occurred. Buttress angles were chamfered. This style lasted about one hundred years, or from the middle of the twelfth century to the middle of the thirteenth.

The Decorated or Perfected Gothic style employed and improved the principal features of the Early Gothic. The equilateral arch was used, and the ogee arch for the first time appeared. Plate tracery developed into bar tracery. The vertical principle was perfected in this style; all forms were made tributary to it. Buttresses became wider, were divided into many stages, and were embellished with niches, canopies and pinnacles. The cusps and bosses were large, rich clusters. The gable and the pediment maintained their sharp angles. The abacus became circular, polygonal and octagonal. The moldings of the capital were plain, and on the bell was a rich and beautiful foliage, the ball-flower being prominent and characteristic. The rounds were ogees, between which hollows, not so deeply undercut as in the Early Gothic, and separated from the ogees by fillets, reposed. The foliage was broader, but less bold, oak, maple, ivy, vine, whitethorn leaves appearing. The cornice was usually a slope above and a hollow below, with an astragal under it. At regular intervals in the hollows were flowers or heads. Crockets, consisting of broad leaves, with attached edges, enriched the moldings. Cusps were multiplied. The most striking general characteristic of this style was that ornamentation became constructional, and not merely decorative. The window tracery appeared in wavy lines instead of geometrical figures, as in Early Gothic. Over doors, windows and niches were weather moldings or drip stones, which were distinguishing forms. The ends extended down to the base of the arch or the springer line, and rested on corbel heads or bosses of foliage. Often this molding was ogeed, crocketed and surmounted with an enriched finial. In all rich buildings the pillars were clustered or molded; in others, circular or octagonal. The foliage of the capital was rich, well executed and more or less detached.

Niches on buttresses or in mural ranges were often capped with crocketed canopies. In addition to the conspicuous ball-flower which alone distinguishes this style, appeared another having four leaves, the successor of the toothed ornament of the Early Gothic. Diapering

became very perfect and beautiful. Finials and crockets multiplied in great profusion. Gables were usually equilateral triangles. Laneet arches occurred sparingly, but drop, equilateral and plain and pointed segmental arches were often seen. Ogee arches were richly molded. The columnar bases had few moldings but numerous varieties, and all conformed to the shape of the shaft. Double plinths were sometimes seen. Over the plinth a common molding consisted of a large projecting torus crowned with several beads. Bosses took the form of animal and human faces, shields, foliage, armor, monograms, etc. Buttresses were always in stages and usually had niches often as wide as the buttress, with crocketed carvings, canopies and pinnacles. Pedestals were common and were either carried by corbels or by columns. The angle buttress was set diagonally for the first. Canopies became especially numerous, varied and beautiful, and were occupied by altars, fonts and statuary. Sometimes the canopies were ogee and sometimes triangular. The ribs of the vaults formed a net work. Fan vaulting had not yet made its appearance. Moldings were diversified, ovolos common and ogées frequent. Splays and fillets increased. The roll or scroll molding identified this period, as did also a long molding, convex in the center and concave on each side. Rounds and hollows often ran together as in Early Gothic. The enrichments were leaves, flowers, figures, heads, etc. Panelling was enriched with tracery, foliage, shields, heraldry. Stone panelling was a feature and the back was dressed with tracery, squares, circles, featherings, shields and diapers. Battlements were often ornamented with panels and pierced with foils. This style prevailed from the latter part of the thirteenth century to the latter part of the fourteenth.

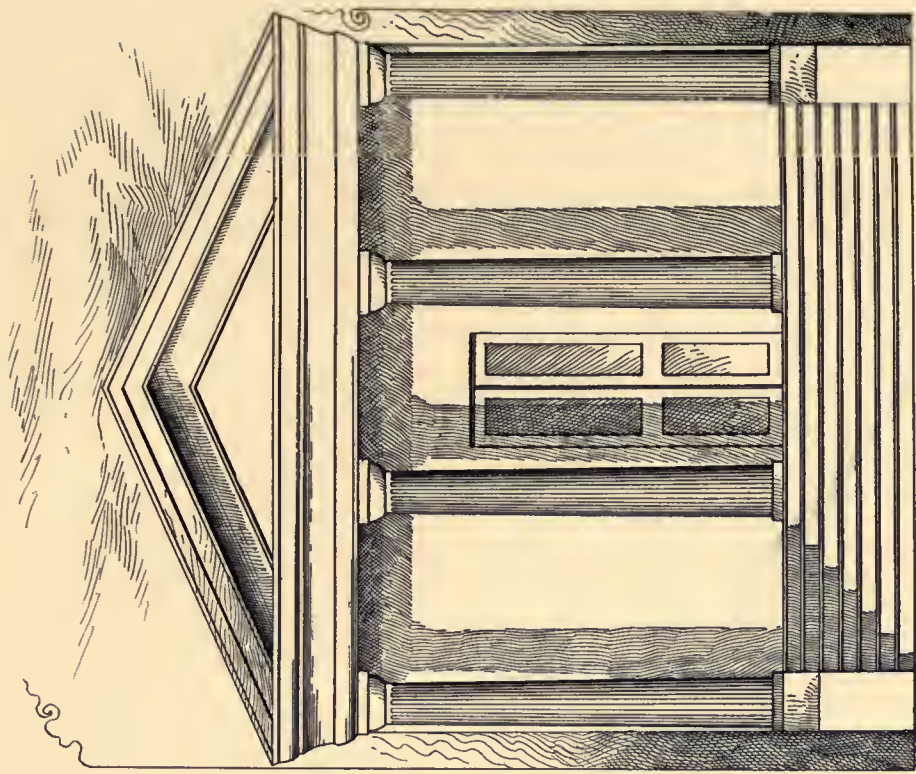
The Perpendicular or Late Gothic style exhibited a decline of the characteristics of the Gothic in general. Innovations and debasements grew in number. Simple pointed arches, plain and pointed segmental arches, three, four and five-centered arches, ogee arches and depressed arches, generally, were seen mingled. They were profusely molded, but not so bold or deeply-cut as the Early or Decorated. The four-centered arch was introduced in this period for the first time. Buttresses were peculiarly ornamented and richly panelled and pinnacled. Horizontal divisions across the mullions formed transoms. The windows, which were very large, rendered the transoms necessary. Over many of the pointed windows appeared, for the first time, square-topped hoodings, and in the angles thus formed were quatrefoils. Roofs were lower and sometimes flat. Fan tracery ran from the pillars up to the ceilings or vaults, over which it spread. Flat ceilings became divided into panels by richly ornamented moldings. Pendants multiplied in great number in this style for the first. Bands of beautiful panelling ran round the buildings. Plinths appeared octagonal, high, and often double. The principal base-molding was the reversed ogee, often doubled and projected well over the face of the plinth. Its angles were usually rounded off, producing a wavy appearance. Bay windows first appeared in this style. Many bosses with shields and armorial bearings decorated the vault intersections. The canopies were without high pointed arches, but appeared in great number and variety, and were richly dressed with pendants, pinnacles, etc. Octagonal capitals with foliage to correspond were sometimes seen. Ogee



FIRST CATHOLIC CATHEDRAL, 1843-4.

GRECIAN DORIC.

MURPHY'S DESIGN.



FIRST COURT HOUSE, 1855-7.

ROMAN DORIC.

SPECIAL DESIGN.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

hollows and heads prevailed. The leaves became stiffer than in the Decorated. The cornice consisted of several small moldings divided by shallow hollows, and had flowers, figures and grotesque heads at regular intervals. Later a rich, ornamental frieze appeared in the cornice. A row of tudor flowers, characteristic of this period, was often seen. The important Gothic principles of vertical lines and unity of separate parts were violated and debased during this era. Capitals became smaller and sometimes were omitted. Stringcourses and bands were rarely seen. Arches became so depressed that they often appeared with square tops. Mullions ran straight up to the top of the windows, which upright appearance here and on panels, etc., gave rise to the term Perpendicular, applied to the style. A notable feature was the elaborate panelling of doors and mural surfaces with an ornamentation resembling window tracery. The quantity of molding was smaller in this period than in the Early or Decorated, but the ornamentation was more excessive. The abacus was sometimes circular, but usually octagonal, even though the shaft was circular, and the moldings consisted of rounds and hollows, united without angles, and beaded underneath. Crockets ran in great profusion over ridges and moldings, and were usually flat and without a projecting edge. Cusps multiplied. Late in the style panelling and parqueting drove out diapering. Escutcheons appeared on the bosses, at the extremities of hood moldings and on panels and spandrels. Coping courses were built in a series of steps from the eaves to the ridges, or were sometimes built in a series of alternating convex curves and steps. This gave a very striking effect to the gables. The form is used in some of the beautiful stone residences of recent date in Chicago. Large shallow hollows distinguished the molding; in short, all moldings had a flat profile when compared with the Early and Decorated. The ogee was commonest. The undulating molding of the abacus and hoodings was peculiar. Fillets were removed from the rounds. A common molding on jambs and arches was a wide hollow with a round on each side. Plain mullions were frequently seen. Horizontal lines, cutting the vertical members, appeared. Elliptical arches were occasionally seen. The timber roofing was often fully exposed to view, and the intervening spaces were filled with tracery, while the beams were molded, carved and ornamented with bosses, pendants, etc. The Perpendicular style commenced about the middle of the fourteenth century and ended near the middle of the sixteenth.

The Early Gothic style has other names, such as First Pointed, Lancet, etc. The Decorated style has been termed Geometrical, Second Pointed, Perfect Gothic, etc., and at its close, Curvilinear, Flowing Decorated, Equilateral, Flamboyant (in France), etc. The Perpendicular is also known as Continuous, Tudor, Rectilinear, Florid, etc. Many of these are merely local terms. The styles did not spring up at once, nor die at once, but overlapped each other. These periods of overlapping are called transitional, and by some authors are treated separately. In an attempt at classification, no good can be accomplished by giving separate treatment to transitional periods, where special forms and types of various styles are often grotesquely intermingled. Still, it is well to note the fact of the existence of periods of transition.

In northern France, Gothic architecture was first developed into a system. This, no doubt, arose from the Normans having learned the use of the arch when they invaded Sicily some time before. When the arch finally made its appearance in Normandy, it was applied, not to new building designs, but to the old Romanesque basilicas. The apse, at first semicircular, soon became three, five and seven-sided, and the aisles were extended past the choir or entirely round it. In place of the Romanesque quadrangular piers, with their half columns, heavy circular ones were adopted. This was an imitation of early Romanesque, except that they were heavier. Early, the rib-thrusts centered on the abacus, but later the ribs and piers were continuous, or practically so. In Belgium and Holland the nave became very wide, necessitating the use of wood in vaulting. Double transepts sometimes appeared. The English Gothic was an imitation of the French. Over the main French doorway was a large, circular window; over the English, a pointed one. The Germans took their early ideas of the Gothic style from France. All things considered, France attained a higher degree of perfection in Gothic architecture than any other nation.

The Italian Gothic made its beginning in northern Italy by adopting the vaulted naves of the Romans. This was the first departure, there, from the Romanesque, and soon resulted in the invention of compound piers, or clustered pillars, pointed arches, elaborate buttresses, towers, spires, pinnacles, traceried windows and high-pitched roofs, and other special features of the Gothic style. Stone-vaulted naves were common, and led to most important results. The Goths, Lombards and other barbarians kept steadily at work evolving Gothic forms from the Romanesque. But the departure was more difficult and less completely accomplished than in countries removed from the influence of the beautiful and imposing remains of Roman architecture. In fact, it is probable that not a single building of pure Gothic forms and principles was erected in that country. Roman members crept into all the structures. And here it was, also, when the Renaissance was heralded, that the first heavy blows were dealt the Gothic, and the varied classical orders were again earliest imitated. The art-loving French soon took an active part in the revival, and gave it name—Renaissance.

The term Renaissance is applied to a revival of classical styles begun in the fifteenth century and continued, to a greater or less extent, up to the present time. Under it are classed the Florentine, Venetian, Roman, Rococco, etc., and the Modern or Heterogeneous.

In the Florentine style, which is usually classed by writers as a member of the Renaissance, there was often an imitation of Romanesque, as well as Roman, forms. For this reason, strictly speaking, it should either not be considered a style of the Renaissance or the revival must be extended to several of the Romanesque members. The general characteristic of the Florentine was a simple massiveness used with great effect on large buildings, but showing an excess of rugged strength in small ones. Entire buildings were constructed of large blocks of stone having broad joints. At first the joints and beds only were dressed, but later, though given flat faces, the body was left to project beyond the joints. This special method of ashlaring became known as rustic work or bossage. The power of the Florentine style was best shown in buildings having rustic work for the substructure or lower story and

plain work for the upper stories. Excellent examples of the style may be seen in Chicago. Very often, when the faces of the blocks were left undressed, they were allowed to project more than a foot beyond the line of the facade. Sometimes the entire facade was built of rustic work, at other times only the lower story. The style was too heavy for residences though used extensively in palaces; it was specially fitted for fortresses or large public buildings. A variation of the style led to the limitation of the rustic work to the quoins of the facade or other angular members or extended it to the entire lower story. The windows had semicircular heads and deeply molded architraves, and often the voussoirs and the jamb quoins formed a continuous series, running up the sides and spanning the top of the opening. They were usually divided into two equal parts by vertical shafts, each part also having a semicircular head resting on the capital of the shaft, and the impost of the large arch enclosing all. Between the two smaller arches and the large arch a circle was usually cut in the wall, in which case the triangular spaces or spandrels thus formed were ornamented with tracery or foliage, or were left plain. The window jambs, the voussoirs, the quoins, the shafts and the intervening spaces were usually left plain, with great effect on the otherwise rugged facades. Small square windows were often placed on the lower story. As a general rule all the windows appeared small, owing to the stiff dignity and massiveness pervading the whole. In this style a massive cornice projected far over the line of the facade and was upheld by consoles or other bracketing. Sometimes the cornice projected so far as to appear insufficiently supported by the lengthened consoles. Sometimes the upper story was an open arcade. The vestibules were either narrow vaulted passages or gateways; to them a small court was occasionally annexed. Often there was an utter absence of the Grecian columnar or pilaster screen over the window and the door arches, at other times it appeared over every opening, and above each row of columns was a complete entablature having an ornamental frieze. In case it was not used, the line between the stories was marked by an ornamental bandcourse. Often the columns of the screens stood on pedestals. Early in the style the gable-roofed basilica was used, but later Roman vaults and domes were invariably employed. Simple massiveness characterized the style.

Venetian architecture, like Florentine, was principally employed in the construction of palaces. The facade was divided into groups of members corresponding to the interior spaces. The columns and arches took the Roman form. Richness and elegance seemed to be the principal effects sought. In the early period Romanesque imitations were common. The style was characterized by its striking decorative peculiarities, which consisted in beautiful panelling of red, green and other colored marbles or stones, arranged in many rich varieties of mosaics. This feature added greatly to the effect; the idea, no doubt, came from the Byzantines. The use of the semicircular gable was also adopted from the Byzantine style. The tasteful and proportionate arrangement of the columns, entablatures, arches, balustrades and window and door caps lent a charming distinction to the facades. Sometimes the openings had half or three-quarter columns supporting arches, the keystones of which assisted taller columns between the windows to support entablatures forming bandcourses. Across

the springer line, spanning the space between columns, between the capitals and the arch bases, architraves often appeared. Spandrels took on a rich dress of sculpture and mosaics. The Doric screen extended occupied the first story, the Ionic the second, the Corinthian the third, etc. Palladio adorned all buildings with the portals of classical temples and carried them up several stories often as tall pilasters resting on pedestals. This method of uniting several stories has often been employed since. Windows were given plinths and square tops, and were crowned with segmental, semicircular or triangular pediments, which forms were usually alternated in the same story. The lower story was often rusticated and occasionally pilastered, while the middle and upper stories were nearly always colonnaded. Small, square windows occupied the space under the crowning cornice. Perfect proportion characterized the designs of Palladio. Venetian churches assumed two forms—Byzantine and Roman. Another distinct variation of Venetian structures exhibited brick used principally as a building material. Enrichments of burnt clay ornamented the door and window cases. Brick entered into the construction of huge piers and formed console-courses to support the cornices. Horizontal bandcourses of decorative burnt clay divided the stories. In the brick structures the arched Florentine window, divided by a vertical shaft and pierced above with a circle, appeared. This style ran from late in the fifteenth century to the end of the sixteenth.

Roman Renaissance, unlike the Florentine and Venetian, which remained confined to circumscribed limits, soon became diffused throughout the world. This style of the Renaissance was comparatively pure, having had less to do with Romanesque forms than either the Florentine or Venetian. Perhaps the most distinguishing feature was to secure on the facades the Roman columnar effect, not by the use of columns and arches, but by the artistic arrangement of architraves, cornices, plinths, bandcourses, proportion and rusticated corners. The windows were given right-angled tops and faced with perfect Grecian screens—two classical columns on pedestals supporting a complete entablature, above which rose a triangular pediment—or the columns took the form of simple shafts carrying a tall impost which supported a horizontal architrave. Profuse richness, simplicity, solidity and dignity characterized the Roman Renaissance generally. Proportion and dimension, particularly in the designs of Michel Angelo, followed definite rules and attained perfection. Classical moldings greatly predominated, but projected less than in the Florentine style. Later, however, they began to depart from classical forms and took on baroque outlines and peculiarities. Horizontal lines prevailed, but under the adventurous or independent tendencies of Angelo, windows were given semicircular, instead of right-angled, heads. This arrangement carried the window arch so high that either the entire entablature had to be abandoned or had to be interrupted so that the arch could rise above it. Often, also, the entablature was reduced to the width of the capital or limited to an architrave. Frequently the arched pediment and its cornice were cut or interrupted to receive a statue or other enriched figure. Balustrades, marked with pedestals supporting statuary, ran round the top of the cornice. Sculptured accessories were few. The lack of adventitious adornment was a distinction of the style. Another important structural form showed rustic work around the arched front entrances,

quadrangular windows supporting a horizontal architrave, Grecian or Roman screens facing the arched entrances, above which extended an entablature, crowned with a balustrade, and stories separated by tasty stringcourses. In this style appeared the entresol or mezanine story—a low one between the lower and second stories—with small square windows. The vestibules of Genoa had steps leading up to them and a straight entrance through to the internal hall. In the Roman style the interior was either vaulted or furnished with horizontal ceilings, and all were painted, panelled and arabesqued. A varied Composite capital appeared often in this style.

It may be said, generally, of the Renaissance that, as it lacked variety of structural forms, it was forced to apply ancient members to decorate the creations of modern times. Sculpture and painting, as in antiquity, were freely employed on interiors by architects of the Renaissance. A colored decoration of animal forms, men, masks, shields, vessels, leaves, vines, sphinxes of wonderful variety and freshness covered all interior panels and mural spaces. Even on the exterior the flat surfaces around doors and windows and the rounds and hollows of moldings were enriched with sculpture and paintings. Statuary rose here and there on the facade, imparting animation or life to the expression. A peculiar painting—Sgraffito—attained great prominence and favor.

In France the Renaissance was preceded by a period of blended Gothic and Roman forms that produced a distinct style. The Gothic features were shown in the recessed doorways, clustered columns, buttresses, ground plans, pinnacles, etc., while the ornamentation was strongly Roman. The French thus evolved a style very rich in sculpture. Over windows and doors, along friezes and bandcourses, on pedestals and pediments, sculptured figures appeared almost in excess. Here and there double caryatids sprang up to sustain entablatures. Perhaps the courthouse is the best example of French Renaissance in Chicago. An excess of external forms and members is here seen, but distance lends enchantment to the view, as it is only from afar that the really noble style of the architecture is shown. Distance kindly conceals the multiplicity of angles and forms, and presents in strong relief the proportionate framework of the building. But many principles of utility were set at naught by the designers. In France the style was particularly rich in historic groups of sculpture on or over circular and triangular pediments. Even the chimneys which rose through a mansard roof were thus embellished. A distinct form in France employed dressed stone like quoins to face windows and doors, and connected the stonework vertically from story to story. High, steep roofs, numerous dormer windows and tall chimneys were marked forms. Mirrors, for the first, were used to decorate the interior.

In Spain the Renaissance united Gothic and Arabian forms with those of the classical styles. The style was characterized by lightness, boldness and magnificence. Probably the decorative splendor was never surpassed, but organic or structural harmony was lost.

In Germany the Renaissance assumed heavy forms and lacked in gracefulness of details. Tudor gables, double windows with plinths and right-angled tops, columns on pedestals

around openings, semicircular or elliptical entrances, triangular pediments and statuary were characteristics.

The Renaissance in England is called Elizabethan. Caprice distinguished the style. There were Tudor gables, quoined, banded or cinetured columns, grotesque faeces and debased forms and figured quoins at jambs and angles. There was a want of grace and dignity; a cumbersome use of members prevailed. Windows were wide and quadrangular. Stairways led up to balustraded entrances. Garlands, clustered fruits, grotesques, festoons, etc., appeared with little taste. However, the architecture of Inigo Jones, during this period, was nearly a pure imitation of classical styles.

The Rococo or debased style of the Renaissance, sometimes known as Baroque, first showed a departure from simplicity and purity to excess, luxuriance and magnificence. The style began in France about the middle of the sixteenth century, and thence spread rapidly until it reached all quarters of the civilized world. The form of construction was trifling—a play with structural effects and principles—a whimsical union of forms, figures and proportions. Picturesqueness was perhaps the most redeeming feature. Bold independence of details resulted in a notable display of bad taste. Curved lines in members and ground plans supplanted straight ones. Details became more prominent than essentials. A profusion of decorative forms concealed constructive designs. Volutes, shells, scrolls, clusters of fruit or vegetables, garlands, festoons, draped curtains, angelic figures, columns, pilasters, pediments and moldings were intermingled without artistic meaning. Cornices were interrupted; rustic work desecrated the ancient sanctity of classical columns and pilasters. The Tudor gables were arbitrarily scrolled, angled or rounded along the copingcourse in the most fantastic fashion—a characteristic of the style. It was on vestibules and courts that this style had free sweep to its picturesqueness. Internal statues were associated with frescoes. Often columnar orders were so recessed back of each other as to form several cornice profiles. Notwithstanding all these defects, the style was used widely for two hundred years.

Near the end of the eighteenth century the Rococo style, though its features continued to appear, was forced to submit to a revival of the pure forms of the classical orders. Early in the present century the Romanesque style, generally, enjoyed a distinct revival. The Queen Anne style of domestic architecture—a profusion of gables, gables, transepts, angles, recesses, balconets, towers and peculiarities—has met with great favor from the barbaric tastes of modern Chicagoans. The application of the balloon frame to its forms has afforded much amusement to builders, and furnished the pioneers of the West with a home, such as it was. It may be considered a pioneer in styles, that will one day pass away with the other pioneers. Modern styles are usually mixed copies of those of former eras. But the schools of Richardson and of Root show a systematic application of ideas, an emergence of certain clear ornate principles from heterogeneous elements, that may, in the end, lend superb grandeur to the Chicago Commercial style and afford unalloyed satisfaction to the people.



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CHAPTER I.



CHICAGO ARCHITECTURAL STYLES.

THE building arts traveled through every civilization for over 5,600 years before they came to tame the prairies of the Illinois, and, for a little longer, before they touched the wilderness of the Chicago with wall and roof. A long night followed, illumined at the close of the eighteenth century by another cabin, and later by a third, the only one found here when the pioneers of trade came. It was the very shadow of a shelter, but pleasant to look upon in the dreary waste. It was the beacon speaking, like the prophets, in parable. Standing on the line between the lake and the unmeasured prairies, it called out to enterprise and courage to come forward and possess a land that grew greater daily. It was a call, uttered in the wilderness, which echoed through the settlements of the East for forty years before the response came. Fifty-nine years ago the beginnings of a city were made here, and, amid these crude, humble attempts, commercial ambitions and commercial hopes as high as mountains were built up.

There are several distinct building periods remembered by old settlers of this city, and each one is well defined. The first or wigwam period was succeeded by the cabin period, of which the fort of 1803-04 was the principal exponent. Then the old-style frame house was ushered in, followed in 1833 by the balloon frame, a style that rendered it possible to cover the western prairie with cottage homes. The brick period was also introduced in 1833, yet its influence was scarcely felt for ten years. In 1843 brick came into general use and contested with the scantling and clapboard for supremacy. Stone for foundation work and for facings and copings was introduced early in the forties, but not until 1856 did Lemont stone come into favor for fronts. The closing years of civil war marked the solidity of the Republic, and gave to citizens, young and old, new men and new deeds of whom to speak. In architecture a new style was dreamed of; men dropped the worship of European forms and sought conveniences or luxuries unheard of before the war. The whole country entered on an era of improvement. New York, which claimed a population of 125,000 before Chicago was mentioned in the Census office, began to appreciate paved streets; Philadelphia made some advances, and, in 1871, the political capital of the Union began to grow out of its primitive condition. The young city of the West kept pace with them and even led the way in some things.

Who among Americans is unacquainted with the log cabin—that house of logs, wherein was bred the strong intellects and indomitable wills that made the Union and now protect it, and which was the beginning of the cities of the land? Here it stands in all its rusticity, conscious of its accordance—a thing of logs! The buffalo house of the wilderness! The pioneer and his wife may have given weeks to its construction, or a collection of pioneers may have raised it and roofed it in a day. It matters not, it is yet the log cabin, unchanged and unchangeable. In size it is 10x10 feet, again 16x12 feet, and again a double-log house merging, sometimes, into a blockhouse. The architect was the owner. He knew the rules of the profession and of the mechanic, so far as they applied to his building. No foot measure, square, plane, chisel or nail was found in his tool chest. The sharp ax, the exact eye and the strong arm were the prime builders' appliances, and he used them industriously. The punch-eon floor, the matched notches to form the strong corners, the window and door openings, the wooden pins, were all formed by the ax in the hands of this resolute, fearless pioneer or adventurer or homeseeker. When the nomad merged into the settler, the log cabin was conceived, and in every country, outside the torrid zone, Nature herself was its architect and every age its time.

To the Aryans, or people of Northeastern Europe, must be credited the beginnings of wooden domestic architecture as distinguished from log huts. The forests of Norway, Sweden and Russia and their human habitants were prime factors in the evolution of the log cabin. As the Scandinavians and Russians advanced beyond the barbaric state, they craved for buildings which could mark this advance, and the frame house was brought into existence. It was a heavy building, carried on immense sills, above which rose an array of posts and beams and rafters. Timber a foot square was not considered too heavy where 2x4-inch scantling is now sufficient, and for their upright weatherboarding, two and three inch planks were considered light enough. The Swiss of the mountains reduced the proportions of material and housebuilding, made them lighter and better, while the Germans of Saxony made them ornamental.

The styles of the Old World were engrafted on the New, and the frame house found a home here. Its development was slow, indeed, in the United States. It appears to have only emerged from the cabin stage early in the eighteenth century, and for a hundred years after, accounts of "getting out timber" and of "houseraising bees" are common. When the first balloon frame building was erected at Chicago, this system of using only heavy sills, posts, beams, girts and rafters was in vogue; so that the early frame houses of the city varied considerably in construction from the houses which soon after took their places.

From two days to a week was the time required to build a low, two-story frame house. The girts, beams and braces being once in position, the boards were placed perpendicularly by one set of men and secured by the battens or the second set. The Temple building, completed, near the corner of Franklin and South Water streets, in August, 1833, was a two-story gabled structure, designed by Dr. Temple. Each floor was lighted by sixteen windows, five on each side and three on each end, except the lower floor, where the door in the center

of the gable corresponded with the center window above it. The siding was placed horizontally, and, all in all, it was a great building for time and place, and the last of the large, old-style frame or beam-and-brace structures. It was the evolution of the log cabin, beginning in Norway and perfected in America. Temple found hundreds of houses like it in the East, and here were not wanting houses to suggest plans; but the wily Doctor made a gable end the front, and showed how a greater number of buildings, equal in size to the larger of the older houses, could be crowded into a block. Temple's idea of frontage won many followers, and even to-day it is a common practice to make the gable end the facade.

During the spring and summer of 1833, no less than 160 frame houses were erected, in and around the business center. Such houses! An improvement on the log cabin, undoubtedly, they conveyed but a poor idea of the balloon frames, which were to follow them.

In September, 1833, the great Indian council assembled here, and the wigwams became characteristic of the village. Those wigwams were the only pieces of true architecture here. Perfect in form, natural as the aborigines could construct them, suited exactly to the life of the prairie nomads, they contrasted strangely with the tarantula-looking cabins of the pioneers or the box-like homes of the latter-day immigrants. Without them the eye of the visiting architect would lose its luster and grow dim; even the style of the quasi-military post could not ease the heartache caused by a survey of this conglomerate of habitations. The building beginnings of the second epoch were rude indeed, but faith in the city of the prairies held men here, who, in after years, made amends for their non-recognition of art and civilization in 1833.

The balloon frame is the joint idea of George W. Snow and necessity. The multiplication of sawmills helped out the notion of lightness, and in July, 1833, a number of men are found erecting a church on Lake street, near State street, of scantling and siding. The ancient builders prophesied its destruction in the first gale, but it withstood the winds and proved the theory of its master workman correct. The rubble stone or great bowlder piers, supporting the heavy sills of the old frame, gave way in this to light cedar posts, carrying a sill 6x6 or 10x10. The sill of the balloon frame was mortised to receive the tenons of the joists, twelve inches apart, and again mortised on the surface at corresponding distances, to receive the tenons of the upright scantling, now commonly called "two by four," but then measuring 3x4 inches. Below the ceiling level each scantling was again mortised to receive the band board, on the upper edge of which the joists of the second floor rested. Such joists were also nailed to the uprights, the flooring placed on the joists, and the siding nailed to the uprights, thus giving a secure box, not too pliable or too rigid, and leaving the first story or floor ready for the lather and plasterer. Sometimes the scantling was carried from the sills the whole height of the building, leaving a 12x4-inch open space between lathing and siding. In the matter of weather-boarding there was a distinction, one party being in favor of the vertical battened boards and the other favoring the horizontal clapboard. In later years a third party adopted the dropsiding, and within the last decade the shingle siding was introduced. The proportions of the old-time frame house varied. Sometimes a

high gable and steep roof appeared among the great number of low-gabled structures, and at intervals a verandah could be seen. As the style developed, the gable or pediment of the larger frame buildings of the period partook, in a certain degree, of the Grecian pediment; but features were introduced of which the Greeks never slept to dream; such were the ventilators or attic windows in the frieze, rectangular openings, sometimes filled with glass, sometimes with lattice work. The cornice, however, was the grand stroke of the artist, and he made it heavy enough so that it would be seen.

During the four years, ending in 1837, brick entered into competition with wood as a building material, but did not make appreciable progress. The Doric columns in the courthouse portico and the pinnacles of St. James' church were wrought out of native lumber, as artisans of that period would not venture to give details in brick. The county authorities were determined to have something Grecian almost sixty years ago, and the Doric responded in its wildest form. It was the period of Renaissance in the United States, when the newspapers of Boston, New York and Philadelphia filled the country with praises of Strickland and Latrobe and the public mind with ideas of the columns and capitals of Greece or Rome. The English church authorities labored to counteract the growth of the national Renaissance, and built after the forms which obtained in England in the seventeenth century, so that in 1837 the villagers had a grotesque Doric house on one side of the river, and a grim, perpendicular Gothic house on the other, telling in wood and brick that architectural ideas were alive and would some day grow and flourish here.

All architecture is the development of previous work or the adaptation of previous work in all generations, just as history, by a partial writer, is an adaptation of recorded facts in a form to suit the requirements and sympathies of his readers. When J. M. Van Osdel arrived here, in 1837, he realized that builders were here before him, but he could not find trace of an architect. There was no discrimination, no style, except that outlined in the very early Doric portico of the courthouse or the colonial house of W. H. Brown. He could not reform what was done, but his professional knowledge could direct that which remained to be done. In the rebuilding of the fallen block, spoken of in the history of city houses, a great influence was exercised, and in the new Ogden house, built that year, he proved the beneficial uses of an architect. With all this, the citizens took an interest in building to the exclusion of architecture and remained in this rut for seven years longer, until it dawned upon them that building after plans is cheaper, in the long run, than building without plans. There was no thought of art. It was a realization of the material. The idea that the Swede or Italian can sweep the street cheaper and better than the owner of the abutting frontage, was the actuating one in the employment of an architect; for he could build better and cheaper than the owner. In 1843 or 1844 the carpenters and masons got this idea, and, henceforth, important work was carried out after plans by and under the supervision of architects.

This was a necessity. The year 1843-4 witnessed the erection of 600 houses, including a brick block of four four-story commercial buildings on Lake street, the Cathedral building and the Dearborn street schoolhouse. The stone of Lemont and Joliet promised a new

material, and the time was ripe for architecture to take a foothold in Chicago and provide at least for straight, strong and useful houses. The Cathedral led the way, a pure Doric structure with pediment and clock tower, well proportioned and large, showing the development of taste during the years which elapsed since the building of the first courthouse. In 1844 the schoolhouse on Madison street was completed, and a building style instituted which was observed religiously and became known as the School building style. Look around you! The majority of city buildings for the uses of public education partake of the same character—veritable barracks, massive brick houses, minus every point which would lead the pupils to a conception of architecture. So it was with the brick commercial block on Lake street. It was built to shelter commercial workers and goods, rather than to memorialize the advance of the building arts. The religious societies aimed higher and succeeded, at least, in planting the orders here with poor settings. They brought the Doric form before the people with just sufficient clearness to show the plinth, shaft, fillet, ovolo and abacus, and in their representation of the Ionic capital they gave volutes which would impress the plebeian while making angels weep.

It is quite evident that sentiment had no place outside the very small minority who controlled the designs for church buildings here, and when representatives of this little minority saw their buildings completed in this western town, and contrasted them with European models, they realized that a new, and particularly a prairie country, could never become the home of Greek or Roman temples. The sense of immensity was too powerful to master by any building which Chicago of forty years ago could raise up. There was the prairie stretching to the horizon, beyond this was the Father of Waters, still farther, the mountains, and then the Pacific—the ocean. Go back forty years and stand on a sand dune near the mouth of Chicago river! You forget the village at your feet, you dream of the *terra incognita* beyond. You looked upon a collection of straggling houses and a few churches as transitory things—expedients, and knew in your heart of hearts that the pre-Byzantine architecture was out of place where the mind could contemplate millions of square miles untenanted by, and almost unknown to, civilization. This idea, bred in fancy, grew, for as necessity or fire removed the Doric and the Ionic temples erected here in the forties, they were not duplicated. They made way for the Romanesque-Byzantine and for that Gothic which could lose itself in the air or merge into immensity rather than crawl on the old marsh.

Chicago architects long ago looked to the Italians and to the French for their models, and hence building arts of these nations ruled here. Their great art schools and their centuries refinement left no choice, for they improved every type and gave a place to the orders and the Romanesque, to the Renaissance and the Gothic. The Classic Renaissance was, of course, their pet form, and hence it must have been the most beautiful to the eye of the French connoisseur and the most profitable to that of the French utilitarian. It is the result of centuries of study and experience. Chicago realized this in the fifties, and when her early architects were asked to revel in beauty, they selected one or other of the styles peculiar to the Italian or French schools, but adapted them to a climate of extremes and an age of high-

priced labor. Thus the sculptured orders, and even the astylar appeared here, shorn of their grandeurs to be sure, yet fairly well observed by the adaptors. Carpenters' Gothic, the name given to the local architecture of less than forty years ago, was built up here on illustrations of English homes and ancient English monasteries, while the American classic style was founded on Stewart's *Athens*.

The builders in brick and stone adhered generally to the Italian or French style in the simplest forms, while the carpenter builders adhered to the Snow-Temple ideals of 1833. At intervals the bricklayer was compelled to deal with gables, but whenever the architect controlled the sentiment of the owner, the gable was discarded, and the cornice or the segmental, semicircular or straight arch of the Latins adopted.

It is true that the balloon frame did not improve much at first under the new lights. The Bull's Head tavern, with its gables and verandahs, could not compare with the Saloon building of an earlier date, and contractors, as well as architects, confessed that wooden architecture had reached the limit of perfection in that year when the sun of the Whig party went down forever. Before the year 1854 was closed, a new timber structure pointed to the errors of their conclusion. The Myrick Castle, with its tower and its cupola, its loggia and its verandah shed a new light on the possibilities of the balloon frame. There it stood, away to the south, telling how Myrick's cabin-saloon on the lake shore grew into a castle. The main building was a low-gabled structure, with two high windows on the first floor, opening on the verandah, and two windows in the second story. Between this building and the tower was an annex, flat-roofed, with door opening on a Doric portico and windows above opening on a Roman balcony. The tower, with its Norman windows, completed the *ensemble*.

Such a building was injurious in its influence on the times. Citizens of that day could not, of course, see the ridiculous side of a wooden building attached to a keep or campanile with embattled parapet, and hence its novelty and size, if not its picturesqueness, won their approval and led to the construction of similar houses. The three divisions of the city welcomed such buildings, and, as there was plenty of space, the square dwelling-house with tower and portico multiplied exceedingly fast. The Carpenters' Gothic grew up like prairie weeds, covering the city and drowning out, as it were, the faint gleams of Thirteenth Century Gothic. One of its gables was still the facade, as in earlier years, but the verandah and stoop, cork-screw moldings, scroll-work, level brackets, chamfered or sash doors, and other attempts at exterior decoration were now presented, and it began to rise from a one-story cottage to a three-story-and-attic house. In some places the spirit of the Renaissance was living, and manifested itself in the pediment and portico—a minority returned, in fact, to the orders, established here in 1843. To-day a few specimens of such classic houses may be seen. They are always associated with a surviving pioneer.

The north and west divisions were given up to homes, some pretentious, the greater number frame buildings with two and three-story, brick, stone-faced structures and green Venetian blinds thrown in. The lack of appreciation for, or means to indulge in, the ornamental, was evident in those rectangular or square houses, so much so that it would not require a

philosopher to discern their Dutch, Quaker or Puritan origin. They were rude without and inconvenient within, but sheltered a people who made merriness out of very little and enjoyed life with Jeffersonian simplicity. Solidarity of interests made them all one. The millionaire was not yet present to outbuild his fellow-citizens, and the French flat was an unknown quantity to 999 per thousand of the population. They were content with their surroundings, and he who complained of the "wild and woolly" conditions of life was at liberty to return to a higher civilization, if he were not actually requested to do so by some irate native. Among all this humility in architecture, there were a few classical buildings. The iron-front block on the north side of Lake street introduced the Corinthian columns in the first story and the windows and pilasters of the Venetian Renaissance in the four stories above. The Palladian style was shown in another iron building on the same street, and the astylar in the marble block east of Clark street.

During the sixteen years, from 1849 to the summer of 1865, comparative advances in the building arts were evident. Prospective builders talked with architects and were shown illustrations of facades by every originator of style from Palladio to Richardson. An idea of architecture was inculcated in the owners, and the architects themselves, driven to study the authors, imbibed some salutary ideas. It was a memorable period. Enterprise battling under the disappointments of panic, or the dark shadows of civil war, fought with desperation and advanced against great odds. Chicago Commercial architecture aimed at greater ends than that of any other American city. Prior to the year 1865 there were not wanting evidences of a desire to forge ahead in the building arts; but amid the sea of tenanted, well-paying cabins, which covered the old city, it required more than ordinary courage to attain this desire. The iron buildings on Lake street, just referred to, the old Board of Trade, the Gothic church on Twelfth street, west of Blue Island avenue, the county courthouse, the Tremont House, and all those buildings described in the history of the period, were erected. Brick was fast displacing wood; house-moving became a distinct trade; frame dwellings were moved to the outskirts of the city, and in their places rose up solid blocks of brick business houses. It was an extraordinary building epoch, when the time and place are considered; but architecture scarcely entered into the calculations of owners, except in the case of the few buildings named above. It was the astylar age of Chicago, materialistic in a degree, severely plain if not actually primitive.

The erection of the Crosby Opera house, in 1865, opened up an architectural field, hitherto untried. The Italian-Byzantine, French-Venetian structure, built for the Board of Trade in 1864, was a pigmy compared with this product of the architect and artisan. Boyington introduced the Norman windows and doorways, and capped all with a graceful Mansard. The stilted arch was everywhere except in the attic, and even there, in the central pavilion, he introduced a double Norman window deeply recessed under a heavy frontal which was carried on caryatic figures. Statuary above the portico found a place here and, all in all, it was difficult for the citizen of 1865 to conceive a future that would give to Chicago a grander building than this opera house. They were soon undeceived. Old Chicago was, in

a measure, a city of surprises like the New Chicago, and wonders crowded into a year. The age of columns and pilasters and spandrels dawned; the Tudor gable was introduced, the second pointed style of the French type appeared, and all the lesser forms of the Romanesque began to take shape. Plans for great hotel buildings were explained; outlines of Thirteenth Century Gothic churches were made for use here, and a determination to build well and truly was manifest on all sides. The architectural circle widened, and in response, as it were, the ideas of owners were enlarged, and the city resolved itself into a great building committee. It was the reign of thought directed toward the building arts and the ornamentation of the city, and the establishment of beautiful suburbs, where the landscape architect could vie with the architect in bringing forth novel and pleasing designs. The Swiss style was introduced at Riverside in 1871, in the erection of the hotel; the Swiss-Gothic style in the construction of the water tower and the Gothic in the structure known as "The Chapel" in that suburb.

A rude interruption was to come. All that was accomplished must be swept away. The Grand Pacific, Sherman and Tremont were completed, the Palmer House, the Nixon building and many other houses of that class were almost ready to receive the roof; new church buildings were in the same condition when the terrible night of October 8-9, 1871, brought destruction with it. The fire-god looked over the Garden City, and, as if regarding art in the highest, determined to destroy the libels on art which the people tolerated. There were many houses, indeed, on business and residence streets, which showed the large expenditure of money. They were comfortable homes or substantial business blocks, showing architecture appreciated; but its principles broken to pieces in almost every line. Nature swept away what she could not tolerate, but did not provide, at once, a safeguard against the repetition of the building designs she despised. The necessity for a prompt rebuilding militated against art in a wonderful degree. The architect himself was as hurried as the owner and contractor; and the masons, bricklayer and carpenter were often at work before the draughtsman began the design. Thus, for some little time, after the great fire, Art suffered from haste and necessity. Men, sane in other affairs, tolerated the construction of wooden buildings to resemble stone and stone buildings to resemble wood. A wild mixture resulted. What the Apache is to civilized man, those buildings were to architecture.

A glance at the history of building operations from 1871 to 1881 reveals an extraordinary activity, a phenomenal metamorphosis of ruin into stone and brick life or forms, typical of western courage and western faith. It was not the conservative courage and faith displayed in 1869-71 which conceived elegant houses for favored corners; but that dashing attribute of enterprise, which, like love, laughs at locks and bars. Several very pretentious buildings were completed and great ones were begun during the three years, ending October 9, 1874. Fire cleared a wide swath or road for progress, and thousands of inflammable structures were reduced to ashes, as in the Rome of Nero. A new Chicago sprung from the ruins of the old, and buildings, founded on the architectural principles of the time, were hurried to completion. Within a few years whole streets north of Van Buren street to the river and from Michigan avenue to the South Branch, showed continued and symmetrical

frontage. The jealous god of progress commended the young city, and imperial governments were awe-stricken at the energy which this western community displayed and the more than human vitality of which it demonstrated to be in possession. Within a year to a day after the old Chamber of Commerce was destroyed, a greater building was completed in the classical style. Plans for other great buildings, the construction of which was in progress at the time of the fire, were extended, and ornamental details, unthought of in 1871, were added. Men looked on the fire as a blessing in disguise.

The present Palmer House, the Tremont, the Honore, the Howland, the Field, the Williams & Ferry, the Rawson, the Oriental, the National Life Insurance Company's and many other houses, partaking in style of the Italian Renaissance; the Boyce, Superior, Lakeside and others outlining commercial Gothic, shed a luster on local architecture and local enterprise. Richardson contributed the front of the American Express office as his ideal of American style; another architect introduced that uncomfortable fiction known as Modern English Gothic, as in the Church of the Messiah, on Michigan avenue and Twenty-third street; plans for the City Hall outlined the greater Renaissance of France. The Grand Pacific, Sherman, Matteson, Leland and a few other houses betrayed French origin minus French ornamentation, and thence downward to the old Rookery the architectural scale descended. That machiavelian structure suggested a line of thought, which has since proved correct, that the authorities of Chicago city were never capable of contemplating the possibilities of their city, while individuals, almost crushed under the losses occasioned by fire, rose superior to the community and gave the first grand houses to the city.

The fire ordinance of 1871 was not without its influence on the building arts. The law was clearly laid down that wooden walls could not find a place within the burnt district; hence the builders were compelled to employ stone, brick or iron. The estimates were far heavier than those for frame buildings, but they had to be tolerated, and with this sense of toleration came a heart-broadening which was not content with the higher estimate, but sought superiority at any cost. Again, money was easily obtained on inside property, and owners, taking advantage of this, built high and large though not always architecturally. The Lemont marble slab and the Ohio sandstone, with brick from Milwaukee and Philadelphia, were called in to assist in this upbuilding. Bricklayers from Philadelphia came to teach the occidental tradesman how to work on the outside of buildings; the fireproofers were present with a hundred specifics against fire; the cornice manufacturer was in the zenith of his power and the architect was everywhere.

In presence of such an army of designers, artisans and material, a cosmopolitan style sprang up. The American idea, or the French, combated with the Teutonic, or German and Dutch, so that it was not uncommon to see a gabled, or a severely plain square, facade acting neighbor to the Renaissance, or between a French and an Italian elevation. This form has come down to the present. True, much of all that was baroque has been removed or improved; but the observer can not fail to notice the varied forms given to city houses during the decade ending in 1879 or to distinguish between the classic and barbaric.

As order is placed above order, so style is found above style. There is the Norman-Romanesque first story, the Italian second story, the Gothic third story and the Mansard attic. Like the people, the architecture is cosmopolitan, sometimes running riot as the Anarchist; sometimes wild as the deer, again tame, and in all things confused, so that it is indeed a study in architecture to look upon one of those buildings, erected here between 1871 and 1881. The Boyce building, on the northeast corner of State and Madison streets, and the Superior building on Clark street opposite the courthouse, are called Gothic structures by architects, simply and mainly because the windows of the third and fourth stories have pointed headings – all the other windows being decidedly Norman. The stilted Norman straight arches of the second-story windows of the Boyce building are very decisive, even as are the Italian-Renaissance windows of the fifth story, yet the building is called Gothic. This can only be explained from the architect's point of view. The third and fourth stories are, undoubtedly, ornamental, and take the eye first. Their tendency is Gothic, or rather a blending of the Romanesque and Gothic, and hence the feature most observable decrees the name of the style.

Building enterprise was not confined to commerce. Religion entered into the spirit of building with the twelfth and thirteenth century energy and contributed many of the finest Gothic houses in the West. The Cathedral of the Holy Name was the truest expression of Gothic, while the church of St. James told of its later perpendicular forms, and other buildings of its modern English expression or of the second pointed style of the French period. Of the four hundred churches in the city, many of the greater ones must be credited to this period.

The North Side led in the erection of brick or stone slab dwelling houses. Whole blocks were covered with those attached, two or three-story-and-basement houses. The bay window and high stoop were characteristic of the time, yet several plain, common-brick fronts came down from that period. Dearborn avenue and Cass street, on the north side, and Michigan avenue and Wabash avenue, within the burnt district, are living examples of this style of city house.

Outside the fire limits the wooden house reigned. It assumed lower gables, heavier moldings and brackets and much more ornate verandahs and stoops than were tolerated before the fire. The square house, with square cupola and sometimes with campanile, still represented the higher idea of timber architecture, as it prevailed before the fire; but the two-story gabled house, with side projection or transept, was the most popular, as it was the true application of architecture to timber construction. The marble palace of W. F. Story, on Grand boulevard, is a milestone of the period, marking the tendency of Chicago's men of wealth to elevate the character of Chicago's buildings.

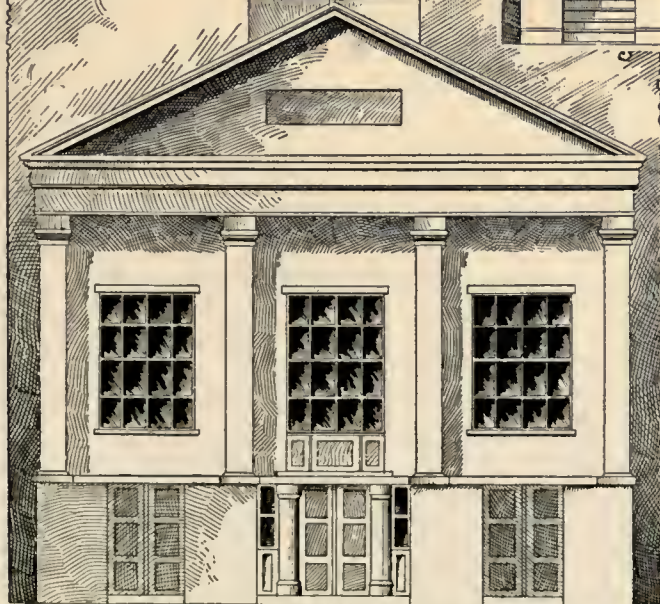
Extraordinary and phenomenal as was the rebuilding of the city during the decade ending in 1881, it was overshadowed by that ending December 31, 1891. There were 61,000 buildings in the old city at the time of the fire. Of that number 20,000 were destroyed, including all the great buildings in the business center and the principal dwelling houses in



FIRST BAPTIST CHURCH, 1844.

IONIC ORDER.

CHICAGO DESIGN.



FIRST METHODIST EPISCOPAL CHURCH, 1845.

EGYPTIAN DORIC.

RYAN'S DESIGN.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

the north and south divisions, thus leaving 41,000 small commercial and large and small dwelling houses outside the burnt district on October 10, 1871. At the beginning of 1880 even the business center presented many vacant lots; but a new building era was at hand, and during that year 1,738 permits were issued. The eight succeeding years brought this number up to 39,763 houses (erected in nine years within the old city limits), which added to the 11,608 buildings erected in 1890 within the new limits, give a total of 51,371 commercial and dwelling houses constructed since January 1, 1881. Even this total gives but a poor idea of the advance; for both commercial and residence houses were built on a much larger scale than those of the former decade; large structures of the rebuilding period were increased in height; remodeled elevator systems and interior decorations introduced, and a tendency to massiveness, rather than to exterior ornament, was manifested on all sides. The Romanesque idea had taken possession of the people in that year, and dreams of great arches, batter walls, massive substructures and other magnificences were entertained. The suburbs presented a scene of unusual activity. Square miles of dwelling houses and improved grounds, rising as it were out of the prairie, appeared north and south and, even westward, the drama of settlement and house building was enacted.

To illustrate the character of buildings erected here prior to 1880, let a few of the leading houses be described. The Courthouse and City hall may be termed one building. The original design contemplated an open court between the rotunda and the streets north and south, on the principle shown in the fronts of the Pullman building and Woman's Temple, and in the eastern and western facades of the Rialto. The architect followed a definite style and, therefore, insured the exterior against the machinations of the boodlers, so far as it was in his power to do. This building is the leading exponent of the French Renaissance, based on the Romanesque, in the West. The first and second stories are Romanesque; above, all is French, influenced of course by the Italian or Palladian forms and latter-day ideals. The ashlar work, piers, arches and keystones of the second story; the principal north and south entrances with attic columns, arches and sagitta; and the portico of the east front, tell at once of Romanesque influence of the Florentine species. Then comes the entablature with its frieze and cornice, defining the limits of the Romanesque and introducing the Renaissance in a series of colonnades. Two stories are now merged into one architectural story, defined by the grand entablature, and, above this is the attic story, the whole being an adaptation of the facade of the Tuileries, the Louvre and the church of St. Paul and St. Louis at Paris. Resting on the first entablature and corresponding with the ashlar piers below are heavy pedestals, carrying Corinthian columns of polished granite, thus giving two projections or pavilions each side of the central colonnade on the east front, and one each side of the center of the north and south fronts. Between each set of pedestals is a balustrade, carried out *in extenso*, forming balconettes in the side pavilions, and balconies in the colonnades. The windows of this section are Palladian, a style carried into the attic story. This attic story, rising above the second grand entablature or cornice, shows the figures of commerce, cornucopia, art and science insulated or as caryatides, with other columns and pilasters. The rock for the

city section was brought from Ohio. The stone for the county building was quarried in the valley of the Desplaines, and is known as Lemont stone. Unfitted for the exterior of such a magnificent building, the powers that were had it used in the heavy cornices, and hence the disintegration of later days. The vandals responsible for its introduction knew nothing of architecture; the architect must be held guiltless. Their work of life was to prey upon the tax-payer. What citizen does not remember the days when the cornice came down in sections, destroying the steps below and threatening human life? Who fails to remember the paint job, where oceans of paint were paid for under the pretense of saving the Illinois rock from the ravages of the very climate where it was formed and grew? Architecture and economy were foreign to the thoughts of the vampires, and Cook county has to undo their work. In building anew let it be remembered that giving sunlight to a county building is as much the duty of the architect as giving beauty. This point remembered, the grand lower stories, the magnificent colonnade and the attic of the French Renaissance will oppose all criticism.

The Palmer House, to which reference is made in the notice of buildings commenced before the fire, was erected in 1871-4, at an expenditure of about \$2,000,000. In 1884 the sub-story or upper attic was added, thus giving a building of 815 rooms, 281 feet west front on State street, 253 north front on Monroe street, with L, 131 feet in width, fronting on Wabash avenue. As a building it belongs to the French Renaissance style, and, with the exception of the city and county buildings, is the finest specimen of that style in the city. There are five full stories, with entresol, two attic stories and basement. The first cornice corresponds with the entablature of the porticoes, and projects over the windows of the entresol or intermediate story. Above this first cornice are two stories, forced into one by columns attached and otherwise; then appears the second cornice, above which are two stories treated similarly, and then the great entablature, above which are the two attic stories, with Wyat dormers in the first and Mansard dormers in the second. The windows, generally double, are heavily labeled. Balconettes are common. The center of the State street facade and the corner tower are the prime parts of the whole exterior. For almost twenty years they have claimed the worship of sight-seers and are still interesting. The annulated clustered shafts of the portico carry a heavy entablature and heavier statuary. Above the portico, large clustered fluted columns correspond with the attached columns referred to above, and support the great cornice and projection of the one attic story. From this to the entablature is richly decorated work. The brackets, frieze, modillions and soffit, show such design and good workmanship that the plain pediment and its cornice escape criticism. The corner tower partakes of the character of the central facade, single annulated columns take the place of the clustered shafts of the portico, and support a balustrade. Above this fluted columns carry a balconette outside the windows of the fifth story, and a cornice above the base of the sixth story. Four Caryatic columns extend from this cornice to the balcony above the seventh story, and brackets support the cornice of the tower, attic and the gallery of the lantern or curb roof. In this roof are six round dormers, and above all is the crest or finial. The exterior *ensemble* is perfect. The interior work is admirable, though heavier than

modern buildings tolerate. In the wainscotting of the hall, from the State street portico to the rotunda, there are thirty-four distinct marbles, and in other respects the interior presents profuseness of material hidden away by French taste. The whole house tells of a dream of luxury before the fire, carried out in detail after the fire, and coming down the years to challenge criticism. The Studebaker building of 1886 shows the French idea governing the style in another form, the Palmer House or Tremont House in a third form, the Major block, the Grand Pacific, the Sherman and other houses of that period in a fourth form, and so on to the end of adaptations.

The American Express building was designed by Richardson to show the possibilities of ashlar treatment as well as those of a style with which he tried to inoculate American architecture before he realized the adaptability of the Byzantine-Romanesque forms to this country. The low, dark basement with ceiling on a level with the sidewalk is its poorest characteristic. Giving a window space to the office entrance in the west pavilion and one to the main entrance in the eastern section of the recessed center, appears patched. The first and second stories are forced into one by a billet-molding taking the place of a light band at the third floor level. The third story is distinct, and is marked for architectural effect by balconettes above on the level of fourth floor in the pavilions and a carved molding in the recessed center. A light molding on the level of the fifth floor gives the fifth story full play with its peculiar arcade of treble-shouldered windows. There are three ashlar stone windows in the attic, small in each of the pavilions and large in the center with stone bull-dog and vault in alto-relievo in the architrave or spandrel of the center and a monogram in that of each side dormer. The central and side windows of the first floor show a petty Norman capped column stronger than the two side columns. A Palladian architrave and general vertical design, particularly on the pavilions, remove this building far away from the Romanesque toward the cold Guelph-Gothic and render it Richardsonian if anything. The Ayers' block is by far a better illustration of the Guelph-Gothic than the Express Company's office. Neither of them should have a place in this city.

In changing from the French to the Italian a great wrong was perpetrated here on the Romanesque. An ill-proportioned building, poorly designed, poorly constructed and poorly arranged, was brought into existence in 1879. Plans for this Florentine-Romanesque, Venetian-Gothic, iron-and-stone United States building on the "Bigelow block," were completed in August, 1872; but the corner stone was placed June 24, that year. A. B. Mullett, a native of the South of England, was the architect, and James C. Rankin, a native of Scotland, assistant supervising architect. They, with John McArthur, a native of Scotland, then postmaster here, were the leading characters in placing the corner stone, though Harvey D. Colvin, a native of New Jersey, then mayor of the city, and other citizens were permitted to participate. The site was purchased in February, 1872, for \$1,667,112.50, and the work of constructing the grand old ruin commenced. Eight years and about \$6,000,000 were given to cover over $342\frac{1}{2} \times 210\frac{1}{2}$ feet of the square described above, with a three-story, attic-and-basement house. The first story is treated with segmental arches and bold transoms.

A court, 83x198 feet, receives a glass roof at the level of the second floor and is open above that level. This forms the great room of the postoffice. The windows of the second and third stories have semicircular heads, with pointed Italian arch moldings. The corners are heavily quoined, but the walls are relieved by ornamental pilasters with richly carved capitals, and the sky line by Gothic chimneys and pavilion roofs.

In 1876 the Portland block was designed for the purposes of a great office building. To the surprise of architects and builders, pressed brick was used for the front in preference to stone, and this being its first introduction to Chicago as a facade material for a massive building, the innovation was coldly received. Within four years this very material had won first place, and stone was excluded from the great majority of the modern office buildings.

The Gothic of this period essayed to outrun local conception, and in more than one instance succeeded among the commercial as well as the ecclesiastical houses. The Lakeside building, long celebrated among the old office blocks of the city, appears to be designed after the style of the Richardsonian or Boston school, for the lancet of Richardson's conception of the Gothic has full play. The building is a five-story, attic-and-basement one, with the vertical piers and horizontal moldings or bands well balanced. The lancet and flat hood-molded, triple windows hold equal prominence. The central pavilion of the east facade is characterized by a Gothic portico, carried on detached pillars, standing out from the stone ashlar piers. Recessed in the gable is a Gothic window, behind a gallery or balcony, and on the exterior of the gable are acroteria carrying figures under canopies. The roof is a mansard, with Gothic dormers, grouped under a triple pediment on the end pavilions, while the frontal of the central pavilion shows a trefoil arch projecting over a flat surface, which is pierced by a triple cathedral window, outside of which is a gallery or balustrade. Above the roof, and resting on it, is an ornamental balustrade, pierced for an oval window in the center above the end pavilions. The Lakeside is a fair example of the better class of old-time buildings. It shows little appreciation of space in interior arrangement, for the large lobbies and wide stairways occupy much more room than would now be tolerated. With all it is a sturdy monument to 1872-3, and a popular office building.

The cathedral on the northwest corner of State and Superior streets belongs to the period under notice. It is one of the finest specimens of Gothic architecture in the United States, and, in itself, points out the change of the basilica of Pagan Rome into the Christian temple. Of course, it is not massive like the great old cathedrals of the world. Built in 1874-5, while yet Chicago was struggling with ruin, it forms an extraordinary testimonial to the rapid work of the time. It does more than that. In every line it shows a strict adherence to thirteenth-century Gothic, and proves that were the finances of the time equal to the conceptions of its projectors and architects, Chicago could now boast of one Gothic church as large and ornamental as any of which Europe boasts. As it stands to-day it presents the principal characteristics of the English Gothic so minutely described in the introduction to this volume.

The Church of the Messiah, on Michigan avenue and Twenty-third street, built in 1873, is simply modern English Gothic, with a peculiar tower at one corner. The method of build-

ing and the building material are fully exhibited within and without. Architecturally, it is irregular, wanting only in a little more ornament to bring it down to the level of modern Scotch building ideas, and wanting in height to bring it up to the thirteenth-century Norman-Gothic of England. It compares with a true Gothic house in about the same measure that a Queen Anne frame cottage does with the Calumet club house.

The Lakeside building, the Cathedral and the Church of the Messiah are described here as examples of Gothic Chicago; but there are hundreds of forms, brought down from the seventies, to which the name Gothic is applied. Of them a good deal is written in the following chapters.

Looking back to 1880, when citizens read of the plans for the proposed high, pressed-brick buildings with pleasure, and later, regarded their erection with pride, what changes have there been? A veritable revolution in the building arts has taken place, and men wonder why they so much admired the Montauk, the Calumet, the First National Bank, the C. B. & Q. office and other buildings of that class which rose above the ruins of the old city. A little later the Western Indiana Railroad building and the Donohue & Henneberry block lifted themselves above the hovels in the vicinity of Dearborn and Polk streets, and again the buildings were admired. The Chicago Opera house, the open Board of Trade, the Adams Express, the Commercial Bank, the Pullman, the Chicago & Alton Railroad depot, and other piles of pressed brick loaned increased charms and symbolized the progress of the city. The Chicagoan was pleased with the massive, high buildings, and the visitor was lost in wonder. To this moving panorama there came an end, and that which created admiration and wonder yesterday was overshadowed by the buildings of to-day. The Rookery, the Tacoma are marvels in brick and terra cotta. The Auditorium, the Board of Trade and the Studcbaker, in stone, are beautiful to-day. Chicago of to-morrow will only remember them as the lower steps in the ladder of American art in building.

So much cannot be said for the progress of ecclesiastical architecture as for that of the commercial and domestic. Looking north, south and west from the tower of the Auditorium, the beholder sees spread out before him a thousand pinnacles, spires and steepleless towers, telling him that Christianity has found an abiding place here. A closer examination shows many pretentious towers with temporary coverings, awaiting the time when religious enterprise will complete them with spire or dome or lantern or battlement; while a visit to the greater church buildings will reveal the truth that Chicago cannot boast of one ecclesiastical edifice which can compare with many in South America, Mexico, Canada, New Orleans or even New York City. Yet considering the youth of the city, its destruction by fire in 1871, and its never-ending rush of trade and commerce, he finds religious edifices here, superior far to those which any other city in the world, of double her age, has raised, and in number equal to the older cities. In many of them, as in the old church of the Holy Family, brick was used in construction, wherein, notwithstanding the antipathy of architecture to this material, many excellent points were brought forth. In the old building named, the architect did wonders with brick, and from the water table to the finial of

the great tower, gave a temple to the city in years long past which battles with the modern stone church buildings for precedence.

Chicago has no Sainte Chapelle to dazzle the beholder with its glories; little of that magnificent gloom which breathes awe and veneration; less of poetry in stone and glass and statuary and mosaics to defy the painter, and scarcely an atom of that imagination which would lend words to describe a single window in that solitary wonder of thirteenth century architecture. The ambition is here, but the value of time and the extraordinary expense of labor do not give ambition room to play as in ancient days. Chicago has no great church when compared with European cities. Even New York's Cathedral, erected in 1879, equals in capacity two of the largest churches here. The seating capacity of some of the great cathedrals of Europe, Canada and Mexico confirms this fact. St. Peter's Church, Rome, 54,900; Milan Cathedral, 37,000; St. Paul's, Rome, 32,000; St. Paul's, London, 35,600; St. Patrick's, New York, 23,000; Cathedral, Mexico, 27,000; St. Petronio, Bologna, 24,400; Florence Cathedral, 24,300; Autwerp Cathedral, 24,000; St. Sophia's, Constantinople, 23,000; St. John's, Lateran, 22,900; Notre Dame, Paris, 21,000; St. Peter's, Montreal, 15,000; Pisa Cathedral, 13,000; St. Stephen's, Vienna, 12,400; St. Dominic's, Bologna, 12,000; St. Peter's, Bologna, 11,400; Cathedral of Vienna, 11,000; St. Mark's, Venice, 7,000.

The list might be extended to 200 houses of worship in Europe and a few on this continent. However, many of the 400 churches of this city show an architectural freshness, a coziness, a simplicity, an inviting aspect, a freedom from gloomy suggestions of the grave, a warmth and richness of sunshine and color, and an overpowering sense of Christian duty and the sublimity of heavenly recognition and forbearance not surpassed in the grander architecture of older cities.

Almost a half century has passed away since the erection of a large public schoolhouse excited the pride of a few and the anger of the greater number of citizens. What appeared great in 1844 looked diminutive in 1855, and so on by decades the school buildings of *ante bellum* days could not compare in extent with those of the *post bellum* period. During the panicky years—1873-8—school building was carried on as a dunder to the trades. In 1879 the large brick house on Oakley avenue and Ohio street was erected, but not until 1882-3 did the extraordinary rage for massive schoolhouses take complete possession of district school authorities. Within the old limits there were no less than eleven new buildings begun in 1883, the seating capacity of which averaged 900 each. The Ruttan furnace was introduced in four of the number and five windows were given to each room instead of four, as in the older buildings. In the best of the old buildings the glass-lighting surface of the windows, in the inside rooms, was only 10.71 per cent of the floor space; in the new buildings the additional window increased the lighting surface to 13.39 per cent of the floor space. The South Division High School building, erected in 1883-4, may be said to be the largest pressed-brick structure erected up to that time south of Van Buren street, not excluding the Normal School building proper.

Talbert, who gave evidence of the Gothic Renaissance among the English-speaking

peoples, and Eastlake, who gave voice to thoughts of the Italians and French, expressed by Pugin or Ruskin, were copied here extensively, but poorly. The Pseudo-Japanese, neo-Jacobean, and that incongruous hydra-headed Queen Anne hugged one another in a wild architectural embrace. The fantastic forms, now so common, were tolerated in the hurry of Chicago life. Gables, pediments, turrets and even towers were insisted upon, and attempts made to build castles of boards and stained shingles. That large class of Chicago citizens who own their homes and cannot indulge in strange fancies, built better and stronger without departing in a marked degree from the more sensible forms of earlier years, except in the interior arrangement, which was improved in accordance with sanitary principles.

The origin of the title, Queen Anne style, dates back to 1863, when some changes in an old house of the Queen Anne period, in Surrey, England, known as Cranbrook Hall, were made by Norman Shaw, the architect. He found a square, box-like house, with two windows each side of a central doorway on the ground floor, and five windows on the second floor. He added a bay window on each side of the hall door, evidently between the windows already there, and constructed a lantern, so that when Architect Butterfield visited the place later he expressed his pleasure at the easy appearance of the house. Relating his experience to another architect, W. R. Nesfield, the latter joked Norman Shaw on his Queen Anne style, and from this old house in Surrey, as well as from the joke perpetrated by Nesfield at the expense of Shaw, the phrase came into use. In 1871 the Red House, Bayswater Hill, London, was erected by Stevenson, a Scotch architect, on this style, and henceforward the name attached to many odd pieces of architecture. A recent writer offers a few reflections on the caprices developed by the mania for Queen Anne houses. He says: "The thing is all wrong, and on wrong principles. The Queen Anne architects indulged in no such freaks as we see now exhibited, and simply because such was entirely opposed to the nature and character of brick. Brick is a simple, honest, plain material, with a good color and hard, smooth surface—that is all. Whatever style can display these qualities best is the Queen Anne style, and no other. The result of the modern caprices will be seen ten or twenty years hence, when certainly decay will have disintegrated or destroyed the whole, or when the owner's heart will have sickened of the frequent repairs and restorations. The old Queen Anne houses produced effect by the beautiful color and surface, the bricks being laid almost touching, the thinnest wash of mortar between. The result is that no rain or damp ever gets between. The modern system of building is opposed to this, thick layers of mortar being interposed, with the certain result that all the elaborate gables, etc., soon begin to separate." The style was introduced to Chicago in 1880 or 1882, at the very moment that citizens of New York cast it out, and by some mysterious, if not machiavelian agency, it dominated the building arts for a few years until architects fled from its influence to embrace truer forms. The gabled, two-story rectangular box-house was a Grecian palace compared with the new weird form to which the name "Queen Anne style" was attached. The word "style" was outraged in the connection, for there were as little use and beauty in this by-play of 1880-85 as there were in the little pug dog and the dude which appeared about the same time.

Another class of house-owners built small and humbly, economizing space, regardless of sanitary science. The cottage homes of the bread-winners varied in form and color. They point out the cosmopolitan character of the people. The German, Swede or Hollander has built himself a cottage-dream of the Fatherlands, sometimes erecting a little barn for temporary habitation, then adding a second floor, later moving to the covered basement of his proposed residence, and building gradually above until he has a two or three-story house. Wherever land is cheap this process of Aryan construction is as visible as its humble oddities are. Notwithstanding the process of consolidation carried on here, those people adhere to their customs, manners and languages, and as they are generally of the peasant or laboring classes, inhabit or build humble homes. They are modern immigrants, unlike the lazy gentlemen of "old Virginny," or the French or Spanish semi-military colonists. They come to hunt for work and bread rather than for pleasure and excitement, and as labor conquers all things, they forge ahead like the plodding, hard-working Puritans of old, and out-distance the sons of those who are too proud to labor or too lazy to think. The economist may praise this penchant, but the artist weeps over it. Let him halt to think! The plodder of to-day will be the millionaire of to-morrow. The sons of the toilers who landed on Plymouth Rock 271 years ago, builded better than the sons of the Cavaliers, who brought titles to this virgin land. Their beginnings are poor, indeed. In occupations, dress, manners, food, shelter and even aspirations, they want but little; yet industry is driving them forward at a rapid pace, and they will be the art connoisseurs of to-morrow.

Unfortunately for Chicago the dwelling builders of 1872-88 allowed all kinds of liberties to be taken with art, and, as a result, thousands of well-dressed residences are as much out of fashion as a silk hat of 1840. This fact points out architecture akin to dress; but Sullivan, Jenney, *et al.* cannot take a house and modernize it as Dunlap can take last fall's hat and batter it into the shape in vogue this fall. The expense is too great, and hence the dwelling stands, a reminder of the vagaries of the period and a teacher. It tells that variation from a definite school of architecture is a dangerous proceeding. Dwellings erected on architectural principles never go out of fashion, and to-day, take the eye of the traveler, who, as he passes by, greets them with peculiar glee and is at home among them. In other words there is nothing funny about a building when its style is founded on architecture, and even its roost of eminence, or its old-time cupola, may escape criticism. Thus the rough-and-tumble Colonial style is venerated, while that miserable medley of all the bad points in building, called the "Queen Anne," is decried. The line between legitimate and illegitimate architecture is clearly shown in the difference between "Colonial" and "Queen Anne"—the first is the excess of simplicity and solidity—the second the excess of tinsel and bric-a-brac, useful only in prospectus, for it promises new work to the mechanic in a short time.

The four years ending in May, 1888, contributed several important buildings. The population in June, 1884, when this remarkable building era was ushered in, was 629,985 or 126,800 more than in June, 1880. Enterprising men looked forward six years to a city of 1,000,000—the limit of their estimates, and began providing business houses, which would

not only meet the true demand; but also go far to provide for their estimate of 1,000,000. The members of the Chicago Board of Trade were the first prophets, and on April 28, 1885, a concourse of 12,000 people witnessed the dedication of their temple—a modern Italian-Gothic pile of Fox Island granite, 175x225 feet, with tower, 303 feet in height. Within the four years were completed the Counselman, ten-story building, 46x60 feet; the Gaff, ten-story building, the Maller building, the Open Board building, the nine-story Insurance Exchange, the Home Insurance building (since increased in height), McCoy's Hotel, the Exchange building, the Rialto, the Brother Jonathan, the Parker, the Kent, the Chicago Opera house, the Pullman building, the C. B. & Q. R. R. Company's office, the Donohue & Henneberry building, the Studebaker building, the Commerce building, the Commercial Bank building, the Hansen building, the Rookery and other monuments to imperial growth.

A beginning was made, and only a beginning. By gradual stages architecture here became imposing and refined, and the question of architectural design and ornamentation entered largely into all matters relating to the building arts. An effort was made by the leading architects to accomplish much of all that the new system of "Chicago Construction" was capable of, and it only remained for them to decide whether the Romanesque style, as exemplified in the Church of Ste. Croix, at Bordeaux, or the Richardsonian style, in Trinity church, Boston, should be accepted as a definite basis. The fact that almost the whole system of Richardson and Hunt had been built up in the *Ecole des Beaux Arts* on Italian and Spanish inspiration led to a decision and the Romanesque became the favored style. The late John W. Root, looking at it in its American dress, dwelt on its tendency toward catholicity, gravity, grace, unity and splendor, and as a result, he made it the predominating characteristic of the great buildings he designed prior to 1888, and of his greater subsequent designs, such as the Woman's Temple and the Masonic Temple.

In January, 1891, Henry Van Brunt contributed to the columns of the *Inland Architect*, a paper on the works of one firm of architects in Chicago. He wrote: "The important buildings executed by Burnham & Root, from 1880 to 1891, from the Calumet Club to the Temple of the Woman's Christian Union at Chicago, show a succession of experiments in form, mainly resting on a consistent Romanesque basis. It is easy to see which of these experiments were thrown aside in subsequent buildings as contributing no desirable element to the progressive power of the style, and which of them were retained and amalgamated, so that their accretions were gradually leading the style out of its condition of mere archæological correctness into one elastic to all the new and strange conditions of structure, material and occupation. By reason of the very intelligent and spirited manner in which Root improved his vast opportunities, by reason of the serious way in which he attacked these more monumental problems, thoroughly realizing his responsibilities to art, it was his fortune to contribute to the development of this great Americo-Romanesque experiment nearly, or quite as much, as Richardson did. The latter introduced the revival, and, through the unexampled vigor of his personality, had already led it on to an interesting point of development, when his career was interrupted by death; the former carried it still further toward the point of its

establishment as the characteristic architectural expression of American civilization. The latter conferred upon it power, the former, variety; and both, with their trained coadjutors in the profession, have already proved that the experiment is not merely a revival, barren of results, like the neo-Gothic, the Free Classic or Queen Anne, and other numerous English trials, but the introduction and probable acclimatization of a *basis of design*, established upon Romanesque round-arched elements, which elements had never been carried to perfection here, and were, consequently, capable of progression. It seems to have been nearly proved that, in the hands of such men as Root, upon this basis can be built an elastic system, capable of expressing any degree of strength or lightness, simplicity or complexity, force or refinement. It has also been proved, largely by his efforts, that the maintenance of the essential principles of the style does not depend upon the preservation of its peculiar original archaic character in structure or ornament; but that it can amalgamate elements from Classic, Gothic, Saracenic, or even Indian sources without being diverted from its strong natural growth, and that it is capable of a variety of expression and application which makes it adjustable to the most exacting requirements of that civilization which it is our duty to express."

Adler & Sullivan went farther, giving the Romanesque, in congenial stone, its most massive American forms, as in the Auditorium. Holabird & Roche dressed their great Tacoma building in the Romanesque and, on every side, in many of the great office buildings, the apartment houses and the modern residences, its round arch, carried on columns or on piers of heavy masonry, may be seen.

The Field building on Adams street, is Romanesque after the Florentine school. The batter walls of the substructure, the plain rock-faced piers above, carrying heavy arches in the fourth and sixth stories, and the rectangular windows in sets of four, separated by smaller piers, give to this structure an appearance of strength and endurance akin to that displayed in the Auditorium, but more decisive. Without ornament save the boultel running up each of the great corner piers, it shows the possibilities of the style, when prostituted to commercial uses. It is immense, like the Auditorium, but is wanting in those Doric columns and molded arches, which lend relief to the massiveness of that structure. The owner desired a plain and substantial building, and the architect yielded to his wish in the matter, giving a Riccardi or a Strozzi palace.

The Walker building, west of the Field, is Romanesque of Romanesque. There is no mistaking the great arches, springing from the capped piers. Above the first story it resembles the middle section of the Auditorium (*i. e.* from the fourth to seventh story, inclusive), but it is even more decidedly Romanesque. Other extremes of this style might be noticed here, but as they are considered in the history of buildings, the two examples on Adams street will suffice.

The Romanesque is now sharing its enviable position in public favor with the Renaissance. The former will always take first place in the great houses of the central business district, and extend more or less to modern churches; but it will be the Romanesque of the seventeenth century in France, or the American Renaissance. The forces of this new Renais-



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sance are vitalizing indeed; but beyond their application to some piece of church architecture or large commercial building, their influence did not extend to Chicago for at least a decade after the fire. Then it found itself opposed by a hundred varied forms; but its victory was decisive where wealth and æstheticism controlled. For great apartment houses and educational buildings, the Italian Gothic, French Renaissance or Romanesque-Byzantine now rules. The influence of each is salutary, for it gives a chance to the architect and builder to make a pretensions showing in the shortest time and for the least money. It is a definite school which will never become old-fashioned, one that will permit license in a measure and hide the sins of constructors, for it takes labor and design to destroy it. True, Chicago has sometimes succeeded in hiding art amid a mass of detail, but the tendency of the apartment-house architects is to treat it fairly within the means placed at their disposal by owners. The requirements of the interior, its finish and equipment, are the prime objects of the American owner, and they must not be sacrificed, says the utilitarian, to the beauty of the exterior.

The age of massive buildings is not confined to the Romanesque. It runs into designs where light and space are preferred to any definite style, and hence are found houses designed by Mr. Jenney, varying in outline from his ideas of 1884, as expressed in the Home Insurance block. The Leiter building in iron and granite, the Manhattan in iron and burnt clay and the Fair, in iron and terra cotta are extreme examples of the transition. The Leiter and Fair buildings present fronts of glass and pilasters with ornamentation subordinated to use, and an intention manifested to give airy, light ^{some} show rooms at the expense of such ornamental detail as he formerly used in the Portland block, Grace church, and even the Home Insurance building. In the case of the Manhattan, 198 feet in height, he provides against opposing buildings on the narrow streets by the introduction of great bays, which serve to focus the light, a feature unnecessary in his State street designs, but one which necessity alone urged him to adopt in preference to the corner tower of the Union League Club, one of the earliest of his modern works.

Mr. Van Osdel, in the Brother Jonathan and Hotel Grace, did not make such a revolutionary departure from his earlier work, nor did Boyington in his Board of Trade and Royal Insurance buildings, cast away *in toto* the ideas which gave to Chicago a few of the finer buildings erected after the fire. Treat & Foltz, Beman, Burling & Whitehouse, Clay, Cleaveland, Irving Pond, were among the earliest modernizers of architecture in Chicago. Each one designed something new and combated the "Queen Ann style" at a time when it had the same noxious hold on the people as the skating-rink craze. Nor should the architect of the Owings building, the Union Club-house and the new Baptist University be forgotten. The Owings is at once the most unique of the great office buildings in the country, showing a merging of several styles into one and leaving little subject for the fault finder. From end to end of the city the influence of thought in architecture is now felt and seen, but there is room for the development of the beautiful. Massiveness, light, ventilation, safety and convenience for occupants, all have been attained, but exterior beauty has been generally overlooked. Massiveness is not magnif-

ience. It is not beauty. It is only the ground work, out of which and on which the beautiful may be wrought by talent aided by wealth. It may be perceived how the modern buildings dwarf the great structures of a few years ago; but, the attention once diverted from massiveness, beauty returns to the stone fronts with their Corinthian pillars and heavy cornices. In other words, the Honore and Howland, the Palmer and Tremont, the City and County building are less to the utilitarian than the great modern bricks along Dearborn street; but they are more to the artist who looks here for a symmetrical column and for a beautiful capital.

Commercial architecture is the just title to be applied to the great, airy buildings of the present. They are truly American architecture in conception and utility. The style is a monument to the advance of Chicago in commerce and commercial greatness and to the prevailing penchant of casting out art when it interferes with the useful. It is a commanding style without being venerable, and after straining necks and eyes to catch a glimpse of the cornice and count the number of floors, the height, proportion and capacity are all that afford delight. Later the feeling of delight merges into one of novelty, and patriotism coming to the rescue, lets the new style down easily, by instilling into the mind the gigantic quantities of material used in one of those monuments, its great capacity, its magnificent systems of lighting and heating and transportation, its great strength, and men learn to look upon it with the same wonder and admiration which the big elephant in Lincoln park wins from children. This style began with the Western Union building, New York, in 1873, was extended to Chicago in 1876 in the Portland, reached its childhood in 1882 in the Montauk and its boyhood with the Manhattan and Fair and Masonic Temple in 1890-91. The commercial style, if structurally ornamental, becomes architectural. An architectural structure must show ornamental forms and designs in clay or stone or iron or wood, necessary as part of such structure. It must also show proportion in length, breadth and height. A non-architectural structure is such an one as shows the plain wall of colonial days with rectangular holes for doors and square holes for windows, with perhaps a Venetian door or Wyatt window, all without proportion. Thus there is a distinction between the Woman's Temple and the Monadnock building. The first is an architectural house, the second an engineer's. The distinctions might be continued *ad infinitum*; but the one given shows where architects draw the line between architecture and civil engineering.

Who would now think of viewing the Honore, the Howland, the Palmer, the Field, and the grand old stone fronts of 1872-4, except the antiquarian. The visitor is brought to see the Rookery, the Tacoma, the Auditorium, the Pullman, the remodeled Chamber of Commerce, and other prodigies of architecture and engineering. The new dwelling houses rising up on the principal streets of each of the three divisions of the city; the new church buildings, railroad depots and warehouses all take the eye of the visitor, while the stone and marble fronts of eighteen years ago are treated with contempt, neglected, lost sight of in the presence of the new. Chicago has no old church towers with bells which tolled generations to the grave. Ever since its foundation, the decay of the old and the advent of the new, were hailed with satisfaction, and at no time was this spirit more manifest than now.

Every advance in the building arts, since the conception of the Tower of Babel, met with objections. When the suggestion was made to creep above the four-story regulation building of old, the suggestor was laughed at. When the Montauk was designed, and people learned that it would be four stories higher than the Honore building, they shrugged their shoulders, and later, when eighteen and twenty-story buildings were spoken of, they brought forward objection after objection, until the question of regulating the height of buildings was presented for discussion before associations of builders and architects, and carried into city councils and state legislatures. All this can not be wondered at. The relation of high buildings to municipal well-being is not so well understood as their relation to architecture; for, in the latter case, the line between civil engineering and architecture is well defined. In the eyes of the investor, a "sky-scraper" appears to possess a thousand recommendations, while in those of men, unacquainted with large capital and its eccentricities, the high building presents a thousand objections; yet the builders follow their desires, and the objectors adopt resolutions. At the meeting of the joint committee on building ordinances, held in New York City, at which were present delegates from the American Institute of Architects, National Association of Builders, National Board of Underwriters and the National Association of Fire Engineers, Chicago being represented by Fire Superintendent D. J. Swenie, the following resolutions were adopted:

The committee advises that the legislatures of the various states should establish state building laws, for the general control of the construction of buildings throughout the state, and that in all incorporated cities there should be a separate and distinct department for the inspection of buildings, whose officers should be appointed for long terms by the chief executive of the city, and should be removed only for inefficiency or maladministration, and that reasonable opportunity should be provided for appeal from the decisions of the department. All buildings over seventy feet in height shall be constructed throughout of incombustible material, protected in the most improved manner for resisting fire. Interior structural iron-work in all buildings shall be covered and protected by fireproof material. All buildings over fifty feet in height shall be furnished with permanent stand-pipes and ladders for the assistance of the fire department. The height of buildings to be erected should not be more than two and a half times the width of the principal street on which they are located, and that no building or portion of a building, except church spires, should be more than 125 feet high in any case, except under a special permit.

That there exists a wide difference of opinion on this subject is evident, but that a man can be prevented from erecting a safe, sanitary and respectable building for legitimate use and of any height, on ground which he owns, is out of the question. Among the friends of the "Elevator Building," and they are numerous, it is credited with everything that is good and useful. A writer in one of the city newspapers photographs such friends in words, stating that the "advocates of tall buildings claim that instead of casting somber shadows upon the streets those "sky-scrapers" actually serve as lighthouses, so to speak, the many windows seizing the sunbeams and reflecting them upon the pavement. Agitation of this matter has resulted in making converts to the theory. One enthusiast declares that the higher houses are built, provided they are studded with windows after the prevailing mode, the lighter will the streets be when the sun is shining. These champions of tower edifices do not stop with this commendation, but insist that they tend to make the air warmer in winter by imposing barriers to the chilling winds, and cooler in summer by causing gentle currents to pass between their

fronts. These enthusiasts smile pityingly at those who suggest that if the sun's light is reflected by the windows some of its heat might also follow and alight about the persons of pedestrians. Yet another blessing pronounced upon these structures is that, although their occupants are so near to the maddening crowd, to the whirr of wheels, the piercing cries of the newsboys and the sharp clang of the grip-ear bell, yet, in fact, those above the fifth floor hear not these sonorous sounds. Peace, they say, is within those walls and quiet reigns in their apartments. And these same advocates laugh at the fears of nervous people as to the safety of these edifices. 'Why,' said a tenant who affects much knowledge of architecture and engineering, 'a cyclone would have about as much effect upon one of these steel structures as it would upon an iron mountain. At the very worst, it could only tear out a bit of terra cotta or brick. The columns, braces and beams are as enduring as the everlasting hills, and absolutely proof against attacks of fire, water and wind. They are provided with every comfort, are blessed with copious light, and the ventilation can not be improved upon.'"

Greater care is bestowed upon foundations and construction than at any period since the great fire. Expensive experience has brought about this result. The questions which Horace addressed to the moralists of his time are equally applicable to architects of the times: *Quid sit pulchrum, quid turpe, quid utile, quid non?* What is appropriate, what is low, what is useful, and what is not useful, are questions affecting the architect of the present, and entering into all details of the builder's art; for any part which is allowed to exceed its due bounds is in a state of instability—an eyesore until it is remodeled or removed. The want of assiduity in architects, the ignorance of details and the willful oversight of defects in the work of artisans have, in our own times, led to heavy financial losses and sore disappointments. There is no cause to-day why a dome should fall or a building settle, for the science of building has been carried down the centuries to be studied by architects. A may build a commercial palace on lots 1, 2 and 3, but neighbor B should not be permitted to weigh down its south wall by a heavier building on lots 4, 5 and 6, for then A's architect, though relieved from the odium by law, is not exempt from the fury of gossip and hence is injured by B's architect, whose thoughts and plans did not turn to a contemplation of the effect his heavy structure would have on adjoining property.

The years of 1881-91 will be memorable for ever in the life of this city. The high Montauk building was completed, and the once pretentious stone building, known successively as the Post-office and Haverly's Theatre, was removed to make way for the First National Bank building. The improvement of the southern suburbs was begun in 1882, and a few modern cottages were erected on the platted prairie between State and School streets and between Sixty-fifth and Sixty-eighth streets. East of Cottage Grove avenue and north of Fifty-fifth street many dwelling-houses were erected, and old subdivisions, all round the city, began to assume a new life. Within the old limits the work of remodeling was commenced. The removal of small window sash to give place to larger sash and single panes of heavy plate glass, the substitution of inside for outside blinds, and the introduction of marble or tile veneer work, must be credited to this period. Ten years witnessed the conversion of pigmy street-

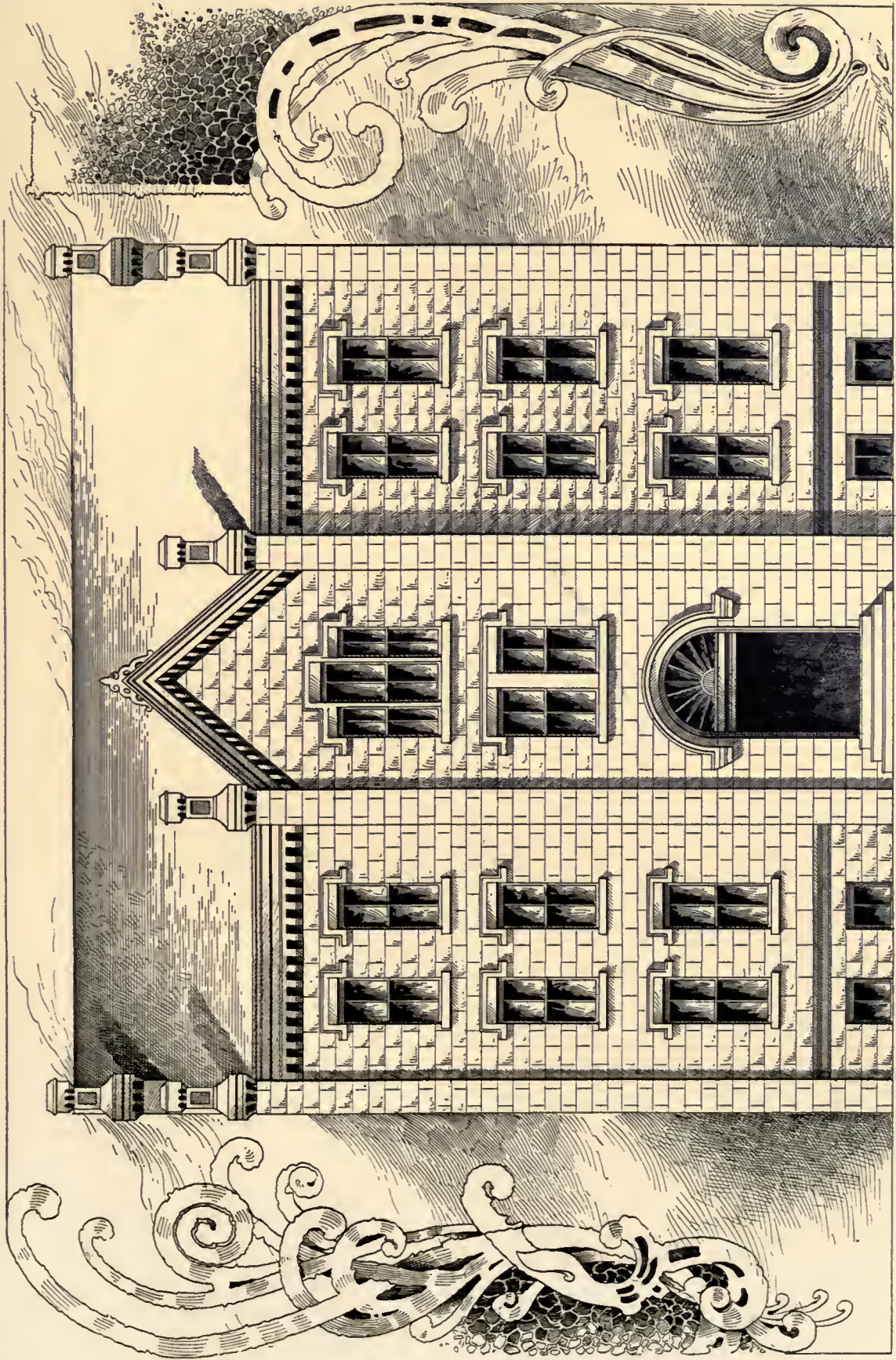
ures into giant houses and the erection of several buildings undreamed of in 1880. While this process of placing from two to eight stories above the great buildings of 1872-80 was in progress, the work of interior decoration was not forgotten. Hard-wood floors surrendered to the magnificent mosaic, and plastered walls to the marble or tile wainscot. The most ingenious ideas of engineers were brought into play in the remodeling of these old structures with the result of rejuvenating them or rather rendering them modern in appearance and conveniences. The introduction of freight and passenger elevators completed the development of the old brick or Lemont flag-fronted house of the past, and it came out of the mill a modern "skyscraper," scarcely recognizable by its old tenants. The competition of the new buildings, the value of ground, the high taxation, and, above all, the desire of the capitalist to reap rich dividends, were the causes which led to these improvements.

The improvement of old buildings has also taken another form. Instead of growing upward they are made to expand outward from the building line. This system was, doubtless, suggested by the Gunther building on State street, the grand bay of which was extended over the step reserve. South of Van Buren street a front, much in the same style, was completed a few years ago, and shortly after the grand copper bays, with coneave French-plate glass windows, sprang up on State and Madison streets. The climax was reached in 1890, when the ground floor front of the Field building on State street was removed to make way for the lightsome Parisian copper bays which now give a charm to that monument of *post-flammam* architecture. Nothing is more beautiful than the bronze pilasters, bands and rounded glass of the Grand Pacific. Nothing was taken from the city in these instances, but much was given; as the step reserve, or elevated platform of prismatic lights, was removed and only a fraction of its breadth given to the bays at regular distances. How far this salutary system of lighting the lower floors of the old buildings will be carried in the future is unknown. That it was overlooked in the remodeling of the Gossage corner in 1890-1 is regrettable; for the grand elliptical or semicircular pane of French glass is the only *sine qua non* to render the interior the most beautiful of all rooms devoted to commerce in Chicago.

Modern architects have many points to consider unknown to their predecessors. Steam, gas and electricity, the furnace, hot-water heater and ventilators, drains, catch-basins and traps, iron, slate, tile and wooden roofs, patent sheathing and lathing and wire lathing; iron, glass, staff and terra cotta constructive materials, in brief—light, heat, beauty and durability, must be given by free, well-paid labor, at a price not exceeding that, which the rough food and primitive clothing and housing cost the feudal lords of old for the labor extracted from their serfs. A thousand details have now to be studied where one was sufficient in past ages, even in designing feudal palaces. Only a few decades ago the conveniences now in use were unknown, and the world of that period compared with this of the present, in this particular at least, as does the rural hamlet of Illinois with the cities of the State. Every day introduces something modern to the builder, the utility of which must claim the attention of the architect. Iron workers appear to be creating an age of iron, clay workers an age of clay. The age of glass, paper and aluminum is almost present here. Everywhere there is activity,

and the youth, who but yesterday became a benedict, is looking around for a home, new like his life and beautiful as the girl he selected to share his little palace. He calls the architect to his aid, and for the first time the variety and intricacies of the science and art of building are presented to him. The professional man is no less amused at the ideas of his client than confused at the means to reconcile them with art, and he too realizes the fact that the modern architect must be at once a man of science, a man of art, a man of business and a man of diplomacy. He must rebel successfully against a babel of ideas. American travelers in Europe and European immigrants in America have to be fought, and that peculiar deviltry in architecture, which in a short time covered the northern cities with pointed oddities, has to be abolished.

A few years of skirmishing for ways and means, impetuous building and rakish architectural ideas ensued after the great fire. Then the panic! When the clouds of financial depression separated, an era of reconstruction was introduced; much that was crude in the buildings of 1872-3 was removed, and architecture took possession of a field which is destined to be a model for the United States, if not for the whole modern world. Look around you and see the transformation! What twenty years have accomplished! What changes in the old, what magnificence in the new! Commerce and art are now banded together to place this marvelous city among the first in the wide, wide world! Men with the will to expend wealth on architecture, artists with the brain to design, and contractors with the honesty to build true, are here. They have made only the beginnings as yet, but the precociousness of such beginnings challenges the admiration and leaves even the citizen to wonder when this phenomenal advance is to be checked or where it will end. The Marquette-stone age, the pressed-brick and terra-cotta age, the age of iron and burnt clay buildings, and with all, the age of the hydraulic elevator, form one epoch, great at present, greater in possibilities.



HIGH SCHOOL BUILDING, 1855.

COLONIAL STYLE.

NORMAN-ELIZABETHAN ORNAMENT.

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CHAPTER II.



CHICAGO'S EARLIEST BUILDINGS.

THE first permanent buildings erected at Chicago were those forming Ft. de la Durantaye, constructed in 1684 or early in 1685, near the mouth of the river, north of the temporary buildings erected by Pere Marquette on the Calumet, some years before. A few years later a large dwelling house was erected by the missionaries of Kaskaskia on the eastern shore of Mud lake and in the vicinity were 150 cabins of the Miamis. A league down the river was an equally large Indian village, and within a day's travel south, north or west, smaller towns existed.

To the cabins of the Indians, the fort of Durantaye and the dwelling house, church and schoolhouses of the missionaries the beginnings of civil, military and ecclesiastical architecture here must be credited. The style varied but little from that observed in Illinois at the time of the Black Hawk war or in Nebraska, when the Sioux threatened the settlements. The transient log cabin and log church or schoolhouse, which may be seen to-day in almost every State in the Union, was introduced at Chicago between 1671 and 1685, and followed until the beginning of the nineteenth century. Though ancient, the cabin is well known; all were log buildings, small for the Indians, large for the missionaries and fortresque for the troops, built solely to meet the exigencies of that time. For use rather than for ornament, the first log houses on the city's site were constructed, and those modest architectural beginnings disappeared only after their tenants had surrendered to Father Time. Almost a century passed away after the building of Ft. Durantaye, before Chicago deserved more than a notice from some passing traveler. It was abandoned very early in the eighteenth century by the missionaries, who found healthier locations in the interior and induced the Indians to follow them.

Some time before the Revolution, a French trader, named Guarie, located at the foot of Fulton street, opposite what was known as Wolf Point, and there erected a log house and stockade. In 1818 the remains of Ft. Guarie were pointed out to the late Gurdon Hubbard by Antoine des Champs and Antoine Besom, whose memories gave the years 1775-8 as the time when it was built. The North Branch was then called La Riviere Guarie, in honor of the pioneer trader.

The octoroon of St. Domingo, Jean Baptiste Point de Sable, moved from Peoria to

Chicago in 1779, and constructed a log cabin near the present intersection of North Water and Rush streets. At that time, as for many years thereafter, the river flowed south through the present terminals of the Illinois Central Railroad, and entered the lake at the foot of what is now known as Madison street. Sable's cabin could not have been an improvement on those of 1684-1775. In front was a door the height of six logs or about fifty-four inches, and a window the height of two logs. In the west gable was a window of similar dimensions. The front wall was nine logs and the gable seventeen logs in height, while a roof of swamp-grass thatch, laid on in combed sheaves and held down by strips of bark, kept out the rain and snow. In such a cabin the second trader made his home until 1796, when he returned to Peoria, leaving the cabin to Jean Baptiste le Mai.

In 1776 Mai had established himself in Sable's cabin as a fur trader, and the same year Antoine Ouilmette built close-by on the north; while the resident trader Pettell dwelt in that neighborhood. There were four cabins standing in 1803 when the troops arrived; but whether the fourth belonged to Davo Burnett or to Guarie will never be known. John Kinzie bought Mai's cabin in 1804, and, soon after, entered on that process of cabin enlargement, which overwhelmed, as it were, the historic logs and hid them away under various coverings. So soon as the civilization of 1833 touched it, it withered, and after its occupation for a time by the Noble family, fire partially destroyed it and the logs were carried away to be used as firewood.

Fort Dearborn was built in 1803-4 under direction of Capt. John Whistler, the first commandant, an Irish soldier, civil engineer and architect. He selected the point of land at the big bend of the river and surveying a quadrangular piece of ground, had a blockhouse erected on the northwest corner and a second one on the southeast corner. Quarters for the troops, a tunnel or secret passage connecting with the river and a strongly-built palisade were also provided. Just west of the fort, the two-story log house, known as "The Agency" was built, while south of it was constructed the "U. S. Factory." All the buildings were whitewashed and presented a scene of cleanliness appreciated by settlers and Indians. Charles Lee located at "Hardserable," now Bridgeport, in 1803-4 built a house on the west side of the portage or South Branch, and opened his farm in 1804. Here in later years was "the Crafts store." Lee also built a cabin on the lake shore, near Madison street, which was purchased by J. B. Beaubien in 1812, in 1817 converted into a stable or barn and in 1832 used as fuel for the vessel "Sheldon Thompson."

The destruction of old Ft. Dearborn was effected August 16, 1812, by the Indians after its evacuation. The massacre took place about one mile and a half south of the south gate of the fort on August 16, that year. The savages did not burn the buildings outside the fort, so that when Beaubien arrived in 1812, he selected the Lee cabin for his home; in 1814, Alex. Robinson found an untenanted cabin; the Indian agent, Charles Jouett, came in 1815, and also found a sheltering cabin, while the trader Du Pin, who married the widow of Charles Lee, took possession of the Kinzie cabin.

In 1815 Contractor Dean built a cabin at the northeast corner of what is now known as

Michigan avenue and South Water street. This Dean was the first tradesman who settled here; being a carpenter and builder he had much to do in the building of the second fort.

In July, 1816, two companies of United States troops arrived to rebuild the fort; the Kinzies returned shortly after to reoccupy their old home; John Crafts came as the agent of Conant & Mack, of Detroit, and purchased the first cabin of Charles Lee, on the South Branch, where Liberty White and another man were killed in 1812; and Daniel Bourassa located his trading house east of the south river, between Lake and Water streets, in 1816 or 1817.

The second Ft. Dearborn was constructed in 1816, on the site of the old fort. Capt. Bradley, who arrived that year with two companies of infantry, must be considered the architect of that collection of buildings. He retained the lines of the old quadrangle, and erected a strong palisade on such lines. Within was the blockhouse, occupying the southwest corner; the officers quarters, a two-story, rectangular building with two chimneys, in the center of the west line, the barracks, a two-story house, with spacious verandahs, on the east line; a house on the south line, with outside stairway, a large stable, a hall and a few smaller buildings. Two lunettes, in addition to the blockhouse, gave to the place that military air, which distinguished it from a southern plantation home. In 1880 the daughter of the old lighthouse superintendent, Meacham, writing to R. J. Bennett, gives the following description of the United States buildings here:

"The lighthouse was a stone structure, kept white by lime wash. The dwelling house stood perhaps seventy-five feet east and north of the lighthouse. The old fort was east and just across a rather narrow street (River street) or road from it. It was west of Michigan avenue; at that time, the avenue did not come to the river, but came to an end just south of the fort. The fort stood on a sand mound, some twenty feet above the river, and occupied a tract bounded by a line running along about River street to near the center of the river as it now is, and east, say 150 feet east of Michigan avenue, to the lake beach, thence south, say a like distance south of the present intersection of Michigan avenue and River street, thence west to the place of beginning. The inclosure was a stockade, formed by setting logs upright and close together, the lower end bedded in the earth and the upper sharpened like pickets or pikes. Within this inclosure and near the stockade were arrayed the barracks and the officers' quarters; they were built of hewn logs. Within these and to the south side of the inclosure, was the parade ground. In 1857 A. J. Cross, now connected with the Chicago, Burlington & Quincy Railroad, but then in the employ of the city, tore down the fort and lighthouse and leveled the mound by carting the sand to fill Randolph street to grade. One of the buildings was moved, but still kept within the site of the fort, to about the center of the Hoyt store. That building stood till the fire of 1871 destroyed it, and thus vanished the last of Ft. Dearborn. A few weeks before that fire I visited that building with my father, and he, laying his hands on one of its corners, said, 'This is one of the buildings of the old fort as I saw it in 1836.'"

On a portion of the site of old Ft. Dearborn stands to-day the large brick building of

W. M. Hoyt & Co. Opposite Rush street bridge a white marble tablet is attached to this structure, bearing the following inscription:

This building occupies the site of old Fort Dearborn, which extended a little across Michigan avenue and somewhat into the river as it now is. The Fort was built in 1803-4, forming our outmost defense. By order of Gen. Hull it was evacuated Aug. 15, 1812, after its stores and provisions had been distributed among the Indians.

Very soon after, the Indians attacked and massacred about fifty of the troops and a number of citizens, including women and children, and next day burned the fort. In 1816 it was rebuilt, but after the Black Hawk War, it went into gradual disuse, and in May, 1837, was abandoned by the army, but was occupied by various government officers till 1857, when it was torn down, excepting a single building, which stood upon the site until the great fire of Oct. 9, 1871. At the suggestion of the Chicago Historical Society this tablet was erected, November, 1880, by W. M. Hoyt.

The stockade of 1816 was built on a larger and more substantial scale than that of 1804. The palisades were heavier and longer. Inside the western line of palisades were the buildings devoted to officers' quarters; inside the eastern line, the barracks; inside the north line, near the gateway, the brick structure used as a magazine; inside the south line, east of the gate, was the guard-room and west of the gate the storehouse. The blockhouse occupied the southwest corner until April, 1857, when it was removed. West of the fort were the stables and cellars. In 1856 the quarters of officers and soldiers were torn down.

Jonas Clybourne, his wife, two sons and John K. Clark, arrived in 1823 and going up the North Branch to the grounds now occupied by the Chicago Rolling Mills, erected two cabins there and established a butchering house. In 1826 there were fourteen cabins including Dr. Wolcott's "cobweb castle," on the north bank of the river, opposite the fort or on the southwest corner of State and North Water streets, and the McKee & Portier blacksmith shop in the immediate vicinity. The cabins of John Crafts, J. B. Beaubien, Antoine Ouilmette, Alex. Wolcott, Alex. Robinson, Peter Piche, Claude and Joseph Laframboise, John Kinzie, Louis Coutraux, Jeremy Clermont, D. McKee, Jonas Clybourne, John K. Clark and W. H. Wallace constituted the civil village of Chicago in 1826.

At Heacock's Point, five miles up the South Branch or portage, a trader named Heacock opened a store in 1831. Two miles nearer the present courthouse, Bernard H. Laughton carried on a store early in the thirties. In 1832 this trader had his cabin at Riverside, southwest of the original town; James Kinzie had a cabin on Wolf's Point; Elijah Wentworth, a tavern, west of the river, near the forks; Robert A. Kinzie, a general store near Wentworth's tavern; John Miller, a log tavern at Wolf Point; Samuel Miller, a log tavern on the west

bank of the North Branch, just above the forks; George W. Dole, a store building on the southeast corner of Water and Dearborn, and P. F. W. Peek, one on the southeast corner of Water and La Salle streets.

In 1831 Mark Beaubien built the two-story and attic Sauganash (English) Hotel, on the south side of Lake street and the corner of Market street. He always claimed that this was the first frame house in Chicago, and it was known as such when destroyed by fire in 1851. The frame was an addition to the old log house. Its Venetian entrance, low-gabled roof, end chimneys and high windows gave to it a colonial style.

The first public structure erected here was the "estray pen," by Samuel Miller, in 1832, on the southwest corner of the square. The actual contract price was \$20; but as Miller, then a county commissioner, did not complete it according to "plans and specifications," he received only \$12. Whether Miller or his associate commissioners, Kercheval and Walker, designed this "pen" is not recorded; but the fact of the dissatisfaction of the people with the structure is established. Miller did not consider a roof necessary for the "pen;" and his ideas of an enclosure were so crude that the sum of \$12 was considered an exorbitant price because objections were made at the time to the payment of that amount.

The second public structure was the blockhouse erected in 1832 on the southeast corner of La Salle and Randolph streets, for the purpose of a prison. Immigrants flocked to the Chicago settlement in numbers, and the villagers prepared to entertain the more refractory spirits in that primitive bastille. The building of unhewn logs, was perfectly square, and about twenty logs high; while adjoining it was a log cabin, with its front gable extending beyond the high picket fence which enclosed the jail. To-day, in the whole extent of the United States, there can not be found such an exceedingly modest public building as that old jail was. True its surroundings were not such as to create jealousy; for there was no extraordinary ambition in the village of sixty years ago.

When Mrs. Ann M. Barnes arrived here, early in the thirties, elder bushes grew along the line of the present Lake street, and the river water was clear and deep and "good enough for drinking purposes." Now the merchant princes of those days came and seeking locations near the river, built their storerooms on the line of Water street. Like Simonides of Antioch, they looked upon the stream and pictured their ships coming in with the luxuries of the East and going out with the product of the prairies. Their ambition was laudable. While gathering the shekels of trade they followed the example of Astor I., of New York, overlooked the disadvantages of the marsh, contented themselves with cabins and gave all their powers of mind and body to money-making. It was the cabin age of Chicago; wonderful only in the fact that the greater number of pioneers survived it to behold the dawn of a higher civilization and a few of them to behold its noon.

The second building epoch opened in 1831. In July of that year Gen. Scott's command arrived at Chicago. The Asiatic cholera arriving with this command, drove the villagers to adopt sanitary measures hitherto undreamed of, and hurried the surviving troops away. The campaign against the Indians having ended, the several companies returned to the East, and,

reporting all they had seen, caused that exodus which assumed large proportions in the fall of 1832. The soldiers and the newspapers used the name *Chicago* so extensively that the emigrants soon knew more of that name than any other, and set out from their eastern homes with the one object of reaching Chicago first and then determining the location of their future dwellings. The immigrants of that period beheld the first frame building on the southeast corner of Water and Dearborn streets, bought bread in Mark Beaubien's frame bakehouse or supplies at Bob. Kinzie's frame trading-store. They also saw Peek's frame building receiving the finishing touches, and learned that, only a few months before, one of the ancient log cabins had been torn down to be used as fuel for the steamer, "Sheldon Thompson." Fortunate immigrants! They came at the close of the log cabin age, and were here at the beginning of the old frame and clapboard age of the village.

So soon as the rays of the spring sun of 1833 melted the ice and opened the waters for navigation, the exodus was resumed in the East. The great majority of the travelers brought with them their household goods, a little money and a great quantity of determination to carve out a home, as well as physical strength to maintain it. The new comers were not the indigent of the eastern land. Each one had learned the lessons of industry and self-support there, so that the New West profited much from their coming.

The first attempt at frame house construction was made by Mark Beaubien in 1831. It was a large addition to his log house, so considerable indeed that it was recognizable as a frame building older than the others by visitors of 1833. Lampman, the brickmaker who came in 1833, stated that Dole's store building of 1832, on the southeast corner of Water and Dearborn streets, was the first frame structure (moved southward in April, 1855); that Robert Kinzie's, on the east side of the South Branch, was the second frame, and that Mark Beaubien's frame bakehouse, east of Blodgett's brickyard, built in 1833, was the third. Lampman, who could tell every brick manufactured in Blodgett's yard, does not seem to be a good authority on frame work; for Beaubien's attempt must be considered the first. Charles Butler, who arrived August 2, 1833, remembers the new frame hostelry, or the Green Tree Tavern, of James Kinzie near the river south of West Randolph street, and the Blockhouse on the North side (the only house then there, as the old Kinzie house was partially burned before his arrival, and the logs which were not destroyed in the fire were carried away to be used as firewood). The Temple building, erected in 1833 by Dr. Temple for miscellaneous purposes, is described in another page. It was the most important of the first beam-and-brace houses and the last of its race in Chicago.

The first piece of ecclesiastical architecture, within the historic period of the city, was designed and built by Augustine D. Taylor in June and August, 1833, at a cost of \$400. This was a frame gabled structure, with five four-pane windows and a door on each side, solid gables and a baptistery. Before the close of the year a eupola was erected to receive the first bell brought to the town. This church fronted north on Lake street, where is now the house of Cameron, Amberg & Co. Later the building was moved to the southwest corner of Madison street and Michigan avenue, thence west to the southwest corner of Wabash avenue and

Madison street, where it stood until moved a point west in 1843 to make way for the pretentious cathedral building.

The First Presbyterian church on lot 1, block 24, Original Town—the southwest corner of Clark and Lake streets—was completed January 4, 1834, by carpenter and builder Mecker at a cost of \$600. This was a very primitive old style frame house 30x40 feet. About 1838 the building was moved south of Washington street on Clark street and doubled in length. Two years later the width was extended to sixty feet, and the house was used for worship until 1849, when a large brick church was erected.

The Green Tree Tavern, which stood on the northeast corner of Lake and Canal streets, was erected in 1833. It was a very low, two-story frame structure, yet destined to outlive all its contemporaries. In 1880 it was moved to Nos. 33, 35 and 37 Milwaukee avenue, where it now stands, a mute historian of the past and present. Fourteen windows on each side, with four windows and a door in each gable, lighted this quaint structure, while the annex showed one large window and a dormer. The cornice of the front gable and the swinging sign and post at the street corners were the only evidences of taste.

The Western Hotel, built in 1835, by W. H. Stow, on the southeast corner of Canal and Randolph streets, almost came down to the present time. A few years ago it occupied its old site, and appeared in much better condition than its senior, the Green Tree. On the northwest corner of Randolph and Canal streets is another old frame building, resembling in size and style the Frink & Walker stage office, with rectangular windows placed horizontally below the cornice.

The Exchange Coffee House, which occupied the northwest corner of Fifth avenue and Lake street, was erected in 1834, by Mark Beaubien, who employed the balloon frame system. The Venetian doorway, which he introduced with so much effect in the older Sauganash, reappeared in the new building.

The Rialto, so named by Dr. Egan, was erected late in the winter of 1833-4, on the site of Nos. 8 and 10 Dearborn street, south of Water street. It was "put up" in a hurry, so that its restoration in 1838 was a necessity. With its restoration, the name "Chicago Theatre" was given, and the rickety building of 1833, daubed with most glaring colors, was considered one of the fine structures of the town.

Dr. W. B. Egan purchased the corner occupied in later years by the old Tremont House, from J. B. Beaubien, after the Black Hawk war, and built thereon five houses. The villagers named this block of pretentious buildings "Egan's Row." In 1833 one Luther Nichols refused to give General Beaubien forty cords of wood for the ground; but Dr. Egan was more liberal and profited by this liberality, for the two-story frame houses which he erected proved a paying investment. They were suggested by expediency, as their balloon frames and architectural outline told at a glance.

The first courthouse was to Chicago of its day what the Parthenon was to Athens or the Pantheon to Rome. Indeed the builders realized that it would be so and, casting away the innovations of the Italians and French, adopted a Doric plan and produced a Grecian build-

ing, while confining its architectural lines to the colonnade. Four fluted columns, with Doric capitals supported the pediment. Eight large windows of eighteen panes each lighted the courtroom, and a flight of broad steps led to the colonnade, on which opened a rectangular hole in the brick wall, called a door. The basement was lighted by seven square windows, and was entered from the north side. Two chimneys, one on each side, raised above the heavy cornice, disfigured the classic structure a little, but, all in all, it was a creditable house, years in advance of the local time.

The "Saloon building," on the southeast corner of Lake and Clark streets, was erected in 1836-7. It was undoubtedly the finest building in the whole western country of that day, and the principal object of the sightseer. In 1842 it was enlarged to a three-story, square, balloon frame, with semi-Mansard roof, and held its site for years, a connecting link between two building epochs in the city's history. The front on Lake street showed four sections, each containing a store front for the ground floor, three windows for the second, and three for the third floor. Beyond the widening of the wall between each section, to double the width of the three piers between the three windows and the corners, there was nothing in the exterior to point out the aim of the owners, J. B. F. Russell and G. W. Doan, to divide the building into four distinct parts should such a course be profitable. Near the south corner of the building, fronting on Clark street, a square bay window was developed before 1843, and in this house the chimney was given a height above the roof and a superior finish unknown in contemporary buildings. Within, of course, it was a fire trap, which nothing less than the caution of the time saved from destruction. The brick buildings adjoining on Lake street also afforded a certain protection which permitted the pioneer Saloon block to come down uninjured by fire to days of greater building ideals.

The first Methodist Episcopal building at Chicago was erected in July, 1834, by the builders, Henry Whitehead and John Stewart, on the corner of North Clark and Water streets, at a cost of about \$600. It was a balloon frame 26x38 feet, standing high on posts. The contractors of that period used posts twelve feet long, four feet of which they placed beneath the surface, leaving the remaining eight feet to meet emergencies, such as sinking under the weight. The primitive character of that building was quite in keeping with that of the people who worshiped therein for the four succeeding years. The house was placed on scows in July, 1838, carried across the river and moved to the corner of Clark and Washington streets.

St. James English Protestant Episcopal or the Kinzie church society, built their first house of worship on the southwest corner of Cass and Illinois streets, with front on Cass street, in 1837; where John H. Kinzie donated two lots. Brick was used in its construction and the Elizabethan style observed. It was 44x64 feet, with entrance in the square tower in front. The two corner buttresses, capped with rude pinnacles to correspond with the four points of the superstructure of the tower, the four buttresses in front, the pointed windows and transoms, the two storm doors at the side entrances, the pulpit, the bell, the organ and the letters I. H. S., painted over the pulpit, introduced an uncommon and hitherto unknown

style of house here. Of the total cost, \$15,500, over one-third was realized from church fairs. The great fire swept it away in 1871.

In 1836 W. H. Brown had constructed a dwelling on the northwest corner of Illinois and Pine streets, which cost \$10,000. It was the wonder of the time and the peer of the Ogden dwelling begun a year later. Though a mixture of the Venetian, Colonial and Mexican styles of architecture it presented better points than a \$30,000 dwelling he had erected on Michigan avenue, twenty-one years after.

In 1837, when J. M. Van Osdel came, there were not more than 1,000 buildings of all kinds in Chicago; about twenty of these were brick structures, the great majority being of woodwork, nearly half the whole number being one-story cottages, and none more than two stories high. The roofs without exception, were shingled. Among the very few buildings that made any pretensions to architectural adornment were the dwelling houses of W. H. Brown and John H. Kinzie, in the north division and of Dr. John T. Temple and George W. Snow in the south division. The latter was the inventor of the balloon frame method of constructing wooden buildings, which, in this city, superseded completely the old style of framing with posts, girts, beams and braces. The great rapidity in construction, and large saving of cost, compared with the old-fashioned frame, brought the balloon frame into general use. As an evidence of its power to resist lateral force, it may be stated that the Bull's Head Hotel, built in 1848 by Mathew Laffin, on the site of the present Washingtonian Home (Ogden avenue and Madison street), was a three-story balloon frame of large dimensions. Standing upon the open prairie with hardly a building within a mile, it remained unshaken by prairie winds, until taken down to give place to the present Home.

The fire of 1871 showed the reprehensible character of the balloon frame and led to the ordinance prohibiting its future erection within the fire limits. That great fire obliterated nearly every building constructed prior to 1838, except those removed to the suburbs prior to October, 1871, such as "Rotten Row," at 546-560 State street, moved from Lake street, opposite the Commercial Hotel. Its east end, which formed a front on Dearborn street, showed the corniced pediment, the broad entablature under the front eaves with frieze, enriched by oblong quadrangular openings, resembling portholes, utilized to light and ventilate the attic. This old block, about 100x30 feet, had to be cut into three sections to facilitate its removal. The Green Tree Tavern moved to 33-37 Milwaukee avenue, now standing there, and the stage-office moved to the corner of State and Twelfth streets, which was demolished in 1886, must also be included.

The first brick building (other than the United States magazine), one and a half story, twenty feet square, was built in 1833 on the south bank of the river opposite the brickyard of Tyler Blodgett. This was built high from the ground, and roofed with lapped boards. The bricks were generally red; but the presence of a white or a yellow brick was common. This brick house, erected in 1833, was looked upon as far superior to the Kinzie cabin. The Lake House, built in 1835-6, was the largest tavern in the city up to 1844. It occupied the west half of the block fronting on Rush, Michigan and Kinzie streets, and was the first large brick house in Chicago.

The brick buildings in the city at this period (1837) were the Lake House, on the south-east corner of Rush and Michigan streets, 80x100 feet, four stories high; the St. James English Protestant Episcopal church, an Elizabethan-Gothic structure with a square tower, located on Cass street, between Michigan and Illinois streets; Steele's four-story brick block on Lake street, built in 1836; William Norton's two-story dwelling on Indiana, near Dearborn; Harmon & Loomis' brick block of four stories, on Water street, completed in 1837, and the frost-torn three-story building on North Water street at the foot of Cass street referred to later. There were two brick buildings in the west division—the two-story dwelling of Chief La Framboise at the corner of Jackson and Canal streets, and that of the butcher, Archibald Clybourne, in the extreme northwestern quarter of the town. In the southwest division was the courthouse, built in 1835, on the northeast corner of the public square, having a basement and principal story 30x60 feet, with a four-column Doric portico of wood. The City Hotel, a three-story building, 80x100 feet, built and owned by F. C. Sherman, stood on the northwest corner of Clark and Randolph, where is now the Sherman House. In this building the town council met; Peter Prunyn's two-story house stood north of Sherman's house, and fronted on Clark street. This was subsequently the Chicago postoffice. The Saloon building, eighty feet square and four stories in height, occupied the southeast corner of Lake and Clark streets. It was built without chimneys; but this omission was discovered after the roof was on and chimney stacks were built inside. The three-story house of the State Bank of Illinois occupied the southwest corner of South Water and La Salle streets; Charles Chapman's three-story dwelling, the southwest corner of Fifth avenue and Randolph street, and the two-story dwelling of P. F. W. Peck, the southeast corner of La Salle and Washington streets. The principal builders at that time were A. D. Taylor, Azel Peck, Alex. Loyd, Peter L. Updike, Charles Lowber, Asbel Steele, F. C. Sherman, Alson S. Sherman and William Worthingham, all of whom died prior to 1883 except Augustine D. Taylor and A. S. Sherman. The former died in 1891, leaving only one of the pioneer builders among the citizens.

In 1836 the large two-story brick building of the Clybournes was erected on Elston avenue, outside the city limits, with front to the south. F. C. Sherman manufactured the brick in the vicinity, and was the mason and contractor for this two-room house. A double colonnade marked the front. Four square columns with Tuscan capitals, corresponding with four pilasters, supported the roof of the first colonnade, and the same system was carried out in supporting the roof of the second colonnade. Above the roof was the observatory and in front and rear a brick parapet with coping.

The Steele brick block completed that year on Lake street, the Harmon and Loomis brick block completed in 1837 on Water street, the church buildings, and a number of two and three-story frame houses, lent an appearance of importance to the village, which the fifty business houses, eight taverns, twenty-five shops, the steam sawmill, the brewery and the furnace failed to convey in 1835.

The recollections of John M. Van Osdel, published in *The Inland Architect*, have, of

necessity, a direct bearing on the history of architecture in Chicago. In the fall of 1836 he became acquainted with William B. Ogden, then visiting New York City. This enterprising pioneer asked the architect to prepare plans for his proposed dwelling house in the town of Chicago, and to move thither to superintend its building. Both offers were accepted, and early in 1837 (June) Mr. Van Osdel arrived here. The sashes for the proposed house were made and glazed at New York, as were also the turned posts and balusters, carved woods, hand-rails for stairs, newels, and other necessary material, which; it was known, Chicago could not then supply. A quantity of hewn lumber was purchased at Chicago from A. D. Taylor, out of which the joists and scantlings were whipsawed for use in the house. On his arrival and while passing from the boat landing to Ogden's office on Kinzie street, he received new professional impressions—nothing less than a block of three buildings on North Water street, at the foot of Cass street, three stories in height, with the entire front lying prone upon the street, met his gaze. On making inquiry he learned that the frosts of the preceding winter had penetrated to a great depth below the foundations, and the buildings having a south front, the sun acted upon the frozen quicksand under the south half of the block, rendering it incapable of sustaining the weight of the building. At the same time the rear or northern part of the block, being in shadow, the frozen ground thawed gradually, and continued to support the weight resting upon it. This resulted in the careening of the block, the front settling fourteen inches more than the rear, making all the floors fourteen inches out of level from front to rear. This pressing outward the upper part of the front wall beyond its centre of gravity, caused it to fall, while it carried the rear wall inward twelve inches, as far as the partition walls would permit it to incline. Mr. Van Osdel's first work in Chicago was the adjustment of the floors in this block, in fact its rebuilding as a tenement house, converting the former store rooms on the ground floor into dwelling rooms.

The panic of 1837-8, resulting from speculation and swollen values during the preceding prosperous period, placed a quietus on building operations and drowned the hopes of the most sanguine citizens. The city charter was received, the spring sun shed its rays on a prosperous people; but the shadow of panic soon darkened the atmosphere, and a little later the reality of panic was experienced. The sales of the Canal Company's land fell from 370,000 acres in 1835 to 16,000 in 1837, and the decadence spread to every industry and threatened every home. Values of all kinds fell prostrate to the basis of actual worth. For a period of fifteen months depression was strongly marked—even the features of the citizens betrayed their fears for the future; but, fortunately, brighter times waited on those days of terror, and by the close of 1838 the reality as well as the shadow of the panic disappeared, and house building was resumed. Indeed many of the citizens who fled in 1837 had their faith restored by the close of the following year, and, returning, took a full share in the revival of trade and industry and in the development of the young city. The building arts began to receive some attention also, and traders, as well as professional men, becoming dissatisfied with their home surroundings, began to look forward to the time when the neat cottage or the great square house would take the place of the first humble homestead.

CHAPTER III.

CLASSICAL ORDERS AND CARPENTERS' GOTHIC.

WHILE it is true that a professional architect came here in 1837 and designed buildings, as well as superintended their construction, his usefulness was not fully recognized for some years after. Augustine D. Taylor and Pere St. Cyr designed the Catholic church, built in June, 1833, on or near the southwest corner of State and Lake streets, and Rev. J. Porter built the First Presbyterian church, completed in January, 1834, on the southwest corner of Lake and Clark streets; but their designs were as simple as their labors were of an eleemosynary, rather than of a financial character. The Temple building, erected in 1833, was designed by Dr. Temple.

In the winter of 1844 the leading builders asked Mr. Van Osdel to open an architect's office, and pledged themselves not to erect a structure without plans. On this pledge he opened an office on Clark street, between the City Hotel and Postoffice. During the ensuing year a block of four brick, four-story store buildings, 130 feet deep, was erected on the north side of Lake street, between Clark and Dearborn, from plans, for which the architect's fee was \$100—a high sum, indeed, for that period in the life of Chicago, even in face of the fact that 600 new buildings were erected within the year 1844.

The first public school building was erected this year (1844), on the north side of Madison, east of Dearborn. It was such a large and expensive structure, so out of all proportion to the ambition and hopes of the people, that in 1845 Mayor Garrett suggested its conversion into an insane asylum, and insinuated that those who urged an appropriation for the building should be the first inmates.

The excavation of the Illinois and Michigan Canal exposed the valuable stone deposits between Lemont and Joliet, and even before the canal was opened for navigation, stone was hauled hither from the new quarries for building purposes; the brickmakers improved their methods, and furnished a fair building material; the sash and door factories and planing-mills multiplied, and even the iron cornice man came on the scene to aid in ornamenting buildings. In 1840 the clouds of panic scattered, and citizens of this western town were the first to take heart and begin the improvement of their surroundings.

In the *Chicago Morning Democrat* of February 27, 1840, an editorial glanced at progress in building, under the heading, "City Improvements." "As an indication of the certain im-

provement of our city, another summer, we are authorized to state that ten brick stores of the largest size are now under contract, and will be commenced as soon as the ground settles. One of them is to be erected by Thomas Church, Esq., where his store now stands, connecting the Saloon and the Exchange buildings, thus making a continuous line of three-story brick stores through nearly the whole extent of the block fronting on Lake street." Of course the buildings of 1840-1, while much superior to their predecessors, were far removed from structures which an architect would countenance. They were simply intended for use, without regard to art.

The first Unitarian church building was erected in 1840-1, on Washington street, east of Clark street, on a lot 80x180 feet, purchased for \$500. A house was constructed by Alex. Loyd that year, at a cost of \$3,758.45. At the time, the builder was pleased to call this style *Doric*, and for some years this gabled box, 42x60 feet, with pepper-box tower, surmounted by a spire, was considered pure Doric by the non-architectural portion of the community. The steeple was not added until 1845, when the second church bell in Chicago was introduced therein. In May, 1862, fire destroyed this house.

The Cathedral of St. Mary was erected by Peter Page and A. D. Taylor, in 1843. This brick building resting on a heavy batter-stone foundation, was 55x112 feet, with side walls thirty-four feet high. Six Doric columns supported the projection of the roof, which, in turn supported the steeple or clock tower and belfry, and formed a beautiful portico, while square columns or pilasters of the same order took the place of buttresses at the corners of the main building and between the windows along the sides. The pediment showed the cross radiating light. This house, the bishop's residence and the Sisters of Mercy convent were destroyed October 9, 1871.

The Small-pox Hospital was erected on the lake shore at the foot of North avenue, in 1843. It was burned in 1845, and a new hospital building erected on the same site.

The Tabernacle Baptist church was erected in 1843, on a lot between Randolph and Washington streets on La Salle, where the Merchants National Bank of later days stands. This was 40x72 feet, cost \$2,200, and was built on the same plan as the first Baptist church, except that the spire was forgotten, and six square Colonial pillars took the places of the six Doric columns in the first church, in forming the facade. It was destroyed by fire in 1851.

Trinity English Protestant Episcopal church completed a building in 1844, on Madison street, west of Clark street. It was a small building with a little exterior ornamentation.

The Bethel society erected a little cabin for worship, in 1844, at the corner of Kinzie and Franklin streets. In 1851 it was hauled to the corner of North Water and Wells streets, and again to the corner of Michigan and Wells streets.

The first Baptist church building erected expressly for Baptist worship, was that of 1844, on the site of the present Chamber of Commerce. It was built of brick, somewhat on the style of the Doric Cathedral of 1843, described previously, but was only 55x80 feet. Six pediment or roof-supporting columns formed the facade, and from the point of the roof above rose a symmetrical clock tower and spire, the height from the ground being 112 feet. The

total cost was only \$4,500, cheap beyond comprehension for that day, for in the tower was a five-dial clock. Brick was costly, and if labor were low priced, it was slow and therefore expensive. During its construction, the great storm of November 4 blew out a side wall. The building was destroyed by fire October 20, 1852.

The first Universalist's building, erected in 1844, near Clark street on Washington street, at a cost of \$2,000, was a frame one, 30x45 feet, with four fluted pilasters and two Ionic columns in front, a pretentious flight of steps and pepper-box tower, springing from an acroterium above the front center of the low gable. It was a much neater building than that spread-eagle house of the Tabernacle Baptists, while of the same nondescript order. The foundation or basement, six feet in height, was constructed of rock-faced Lemont stone.

The Methodist Episcopal society, through Rev. W. M. D. Ryan, commenced the erection of a large brick house on Clark and Washington in 1845, and completed it that year. The basement, eight feet in height, was stone, and, through it, entrance was obtained to the auditorium. The brick walls, resting on the stone work, thirty feet high, supported a low gabled roof, and from the front center of this roof rose the belfry, clock tower and steeple 105 feet or 148 feet from the ground. Between each window and forming each corner, the brick work showed a pilaster with Doric capital, and, all in all, the architecture of Messrs. Van Osdel, Sullivan and Ryan was creditable to the Methodist Church architecture of the period, and a model in the opinion of its designer and builders.

The University of St. Mary's of the Lake, the first high educational institution of Chicago, was established in 1844, and on July 4, 1845, the college buildings were completed on the blocks bounded by State, Rush and Superior streets and Chicago avenue, at a cost of \$12,000. It was a slightly building, its location was beautiful, and the landscape gardening was beyond compare with anything in the West of that period. In 1862 the erection of a great university building was begun on plans made by Architect G. P. Randal; but only one section was ever completed, and this small section cost \$35,000. In 1868 the project was abandoned and the buildings given over to the uses of St. Joseph's Orphan Asylum.

St. Xavier's Academy, established in 1846, is the oldest institution devoted to the higher education of young ladies in the city. The buildings on the northwest corner of Wabash avenue and Twenty-ninth (with grounds extending west to State street) may be said to signalize the advance of the great South Division. Designed with care, and substantially constructed in 1872-3, these buildings stand to-day a testimony to the architecture and higher taste of the period. The attic story, with its great dormers and stylish roof cannot be surpassed.

The pioneer building of Rush Medical College occupied the southwest corner of Dearborn and Indiana streets. In accordance with the design of J. M. Van Osdel, it was a Romanesque-Byzantine brick building, with stone facings, resembling, in some respects, the private mosque of a wealthy Mussulman, the low dome being peculiarly Turkish. The building was begun and completed in 1844, but within the following decade necessity urged its enlargement, and in 1854-5 the sum of \$15,000 was expended thereon, the style remaining the same.

St. Paul's German Evangelical Lutheran society built their first house on Ohio and La Salle streets in 1846-7. It was as plain as the uncertain character of the organization would permit, and in 1848, when doctrinal points divided the society, the new United Evangelicals held the property and the primitive building. The original church purchased a lot on Indiana street, west of Wells, and erected thereon a frame house, 25x55 feet, with a spire as high as the building was long.

The first theatre building, as distinguished from the old dance and music halls, was that erected by John B. Rice, on the site of the present Unity block, in 1846. It was a "wild and woolly" affair, within and without; no better, and only a little worse than the times and actors and audience. Subsequently it was transformed into an office building, and disappeared in the great fire.

St. Patrick's church, of 1846, was erected on Desplaines street, between Randolph and Washington, by A. D. Taylor, at a cost of about \$750. It was, of course, frame; but as the price represents only the material, the reader must not be surprised to learn that old St. Patrick's was a large building, and possessed many good architectural as well as decorative points. In 1854 the present building on Desplaines and Adams streets was begun. Had stone been used instead of brick, it would to-day be one of the great Norman Romanesque houses of the city. The two towers, the entrance, windows, aisles and transepts of the Romanesque style, are all found in this old parish church. It was built without a basement; but in 1871 the house was raised, and a high stone basement constructed at a cost of \$20,000. In 1873 a gallery was constructed, three new altars erected, and the interior frescoed; in 1875 the boys' schoolhouse was built, at a cost of \$24,000, and in 1876 the girls' schoolhouse was completed, at a cost of about \$25,000.

St. Joseph's church (German) was built in 1846, at the northeast corner of Cass street and Chicago avenue, when a frame building, 36x65 feet, was erected, similar in style to old St. Peter's on Fifth avenue. During the first year of the war a new house was erected on the same site, which cost \$60,000. In November, 1862, the gallery collapsed; but beyond this fault of the carpenter, the building was a substantial one, presented some excellent architectural features, and in 1871 gave battle to the fire. Immediately after the fire St. Joseph's Catholic congregation had a temporary frame building erected on the site, at a cost of \$6,000. In 1876 the great brick church building on Market and Hill streets was erected, at a cost of \$40,000, and since the fire the neighborhood has been covered with large buildings devoted to educational and religious purposes.

St. Peter's church (German), begun in March, 1846, on Washington and Fifth avenue, was a one-story frame house, 40x60 feet. Above it rose the conventional steeple and belfry, and round it clustered the schoolhouses and rectory. The buildings were moved to the southwest corner of Clark and Polk streets, in 1853.

In July, 1847, the Third Presbyterian society purchased the little house on Union street, between Washington and Randolph, and dedicated it to church purposes. In 1858 their \$50,000 Lemont stone building was erected, on the northwest corner of Carpenter and Wash-

ington streets. The tower, steeple and spire of this house were symmetrical. In 1884 it was destroyed by fire, but restored in 1885, at a cost of \$60,000.

The Methodist Episcopal chapel fronting north on Indiana street, east of Clark, was built in 1847, at a cost of \$1,300. It was, of course, a frame building, 35x45 feet, with low roof, a furnace in summer and a refrigerator in winter. For a decade the pioneer Methodists of this section burned up or shivered down in season, and ultimately lost building and ground, the humane mortgage holder being unwilling to behold such physical suffering.

St. Louis church (French) was commenced in 1848 on the east side of Clark street, between Adams and Jackson, where the Federal building now stands. It was a one-story frame building, 25x75 feet. Of the total cost, \$3,000, P. F. Rofinot subscribed \$2,000. Within a few years the interior of this building became a picture; Frenchmen decorated it, and citizens and visitors alike had, at last, found a place in the prairie country where they could feast their eyes on true decorative art and true taste. Through the asperity of Bishop O'Regan, this building was moved to the corner of Polk and Sherman streets in May, 1858, where the fire of 1871 found it and left it in ruins.

The first Norwegian Evangelical Lutheran building was raised up in August, 1848, out of the ruin of a storm-tossed semi-finished building, which stood on Superior street west of La Salle; as reconstructed it was a primitive Norwegian house, 50x60 feet, and built like a thermometer to show changes of temperature.

The Market building, designed by J. M. Van Osdel, was erected in 1848, at a cost of about \$11,000. It fronted forty feet on Randolph and extended north, from the center of State street, 180 feet. It was a brick two-story building, with stone facings, and though built for market, library and council uses, showed a few fair architectural points, and robbed the older Saloon building of its glories. On the ground floor were thirty-two market stalls, and on the second floor a chamber, 20x40 feet, for library purposes; one of similar dimensions at the south end, for city official purposes, and in the center two great halls, 40x70 feet, connected by folding doors, for council meetings and theatrical purposes.

The first church house of the Holy Name parish was completed in 1849, a temporary structure for use until the English-speaking congregation could build a large house on the North Side.

The first synagogue building was that erected in 1849 on Clark street, south of Adams street. It was the first symbol of Judaism here, and as meek and humble as its commercial beginning. It is believed that this primitive cabin stood on Capt. Bigelow's lots, and as the Captain would lease but not sell them, the conservative Hebrews moved to the northeast corner of Adams and Fifth avenue, in 1855, where a lot was acquired. The building on the new site was little superior to the old house and Gentiles were pleased to learn that the congregation was growing, since this growth would necessitate the removal of the cabin.

The Methodist Protestant church erected a building on the northwest corner of Washington and Desplaines streets, in 1849. It was very small, and disposed to follow every wind, but it held its place long after the builders disbanded their organization.



CROSBY'S OPERA HOUSE, 1865.

NORMAN-ROMANESQUE-BYZANTINE STYLE.

ITALIAN ORNAMENT. MANSARD ROOF. BYZANTINE DOME.

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The first building of the Reformed Presbyterians was that at the corner of Clinton and Fulton streets, completed in December, 1849, at a cost of \$1,600. It was a 36x60-foot frame building and dubbed Gothic by the exuberant newspaper men of that day. Ten years later it was destroyed by fire.

The Second Presbyterian society built their bituminous limestone meetinghouse in 1849-50, on Wabash and Washington streets, 73x130 feet, fronting on Dearborn Park and the streets named. The walls were fifty feet high and the main spire or tower 164 feet. This building, as designed by J. Renwick, Jr., of New York City, and built by George W. Snow and A. Carter, cost \$30,000. J. M. Van Osdel had charge of its construction, and so thorough was his work, that the building showed no sign of age in 1871, before the fire swept over it. Owing to the varied color of the stone, the building was known as "the Holy Zebra."

The Mercy Hospital building, on Calumet avenue and Twenty-sixth street, dates back to 1848-9. It is a three-story, basement and attic structure, with gabled roof and ornamental stacks. It is one of the largest of the older buildings in the south division, and in sanitary arrangement and equipment equal in every respect to the most modern of hospital buildings.

"Miltimore's folly" schoolhouse, afterward known as the Dearborn school, was erected in 1844, on the site of the old Inter-Ocean building, opposite McVicker's theatre. This was the largest schoolhouse in the whole West, cost \$7,523.42 and drew down upon Alderman Miltimore, J. Y. Scammon, Alderman Goodhue, *et al.*, who were foremost in urging its erection, the wrath of the tax-payers. The idea of selling this large house was seriously entertained, as the proceeds of such sale could be appropriated toward building several small schoolhouses, but the idea was not put in practice.

The year 1844 brought the Jones school into existence near the corner of Clark and Harrison; the year 1845 the Kinzie school, near La Salle street on Ohio street, 45x70 feet, cost \$4,000; the year 1847, the Scammon school, near Halsted street on Madison, cost \$6,795; the year 1851, the Franklin school on Division and Sedgwick streets, cost \$4,000; the same year, the Washington (later, the Sangamon), on Indiana and Sangamon streets, cost \$4,000; the year 1853-4, the Brown school on Warren avenue, between Page and Wood streets; the same year, the Mosely school near the American Car Company's shops; the year 1854-5, the Foster school building, and in 1855-6 the Ogden school. The question of establishing a high school, on West Monroe street, was considered in 1855, and the building of a house for high-school purposes recommended. The trustees ventured to lend the enchantment of architectural design to the buildings, but they ventured beyond their depth, and the common sense of the contractors relieved them by giving to the people common-sense buildings in accord with, if not superior to the surrounding houses. The Scammon school building, erected in 1847, on West Madison street near Halsted street, had its caps, sills and water-table cut at Joliet, and transported by wagon to Chicago.

The churches of the period, with the few exceptions noted, were primitive affairs, many of them the initial attempts of religious denominations in the West. Much could not be expected

from religious Chicago of that day, yet, when the conditions of life in the old city are considered, the thinking man must confess that much was given.

There were no buildings constructed purposely for the storage of grain prior to 1848; but several frame warehouses on each side of the river were devoted to such storage. In 1842-3 machinery was placed in six or seven of those buildings for elevating and distributing grain, one horse, walking on an endless revolving platform, being sufficient to run each machine. The grain was received from farm wagons driven close to the building, as is now the case in many sections of the West, where the bags were emptied into a receiving hopper, whence it was passed to the weighing hopper, and thence to the elevator buckets. It was necessary to form a pit several feet below ground to allow the grain to descend to the elevator. Such pits were circular, water-tight tubs from seven to nine feet in diameter and from seven to eight feet in depth. In 1843 Newberry & Dole erected a large grain warehouse on the northwest corner of Clark and South Water streets, where the horse and endless platform were used for power. George Steele built the first frame elevator on the northwest corner of Wells and South Water streets in 1848 and introduced steam machinery. E. H. Haddock and M. O. Walker built one on the southwest corner of River and Dock street, in 1849.

Prior to 1849 a few architects and draughtsmen settled here, for in the city directory of that year the following names are given: A. Carter, 75 Clark; John N. Turphen, Washington street; Mr. Cloek, draughtsman, 153 Dearborn; William Clogher, draughtsman, 113 Wells; W. S. Denton, architect, 117 Franklin; L. J. Germain, B. F. Hays, architect, Monroe and Desplaines; John Van Horn, Desplaines; Francis Murphy, St. Mary's college; Charles Penny, draughtsman, 161 Lake. J. M. Van Osdel, of course, was here then as now, and to him the new comers looked for such information and professional aid as strangers in a new western town require to have. Such information and aid were freely given, and the recipients became part and parcel of a progressive community.

During the year 1849 a large number of commercial and religious houses were designed and the work of construction entered upon in many cases; but not until 1850 did the dreams of the architects take definite shape. The old Tremont house (completed in 1850 at a cost of \$75,000, for Ira Coueh, from plans by J. M. Van Osdel), was one of the wonders of the period. This five-and-a-half-story brick building showed a frontage of 160 feet on Lake and 180 feet on Dearborn. C. & W. Price were the masons and Updike & Sollett the builders. The new house was looked upon as the finest hotel building in the Union, and, a few years later, when it was proposed to lift it bodily upward to the new grade, the oppositionists quoted the expense of moving or tearing down such a building as enough to warrant the defeat of the measure. The streets were graded and the structure raised as related in other pages. The attempts at ornamentation were all that the brick of that time would permit; but the completed building, great amid its surroundings, could not compare with any one of the buildings in that section of the present city. It was furnished with cutstone from Loekport, N. Y., and to it the sanitary arrangements of old Chicago were first applied, the sewage being

conducted by a plank drain to the Anson Sweet main sewer. The following buildings had no notable architectural features; they were simply square or large rectangular structures, built solely for utility, with the windows, cornices or gables sometimes dressed with molding or other ornament:

The T. Wadsworth four-story semi-fireproof block, eighty feet on South Water and 133 feet on Franklin, cost \$16,000. J. M. Van Osdel was the architect; Peter Page, mason, and Urdike & Sollett, builders. The McCord, Peacock & Thatcher and S. B. Cobb four-story brick block on Lake street, between Wells and Franklin streets, 60x105 feet, cost \$9,000. McDearmon, Loyd, Dunlap, Campbell and Butler were the builders. The George Smith four-story brick block, eighty feet on Lake and eighty feet on Wells (Fifth avenue), was designed by J. M. Van Osdel, and built by Charles O'Connor, and Campbell & Butler, at a cost of \$16,000. It was the finest mercantile block erected here up to the beginning of 1851. The I. & J. Dike \$9,000 four-story brick block on West Water street, between Washington and Madison, was designed by Van Osdel, and built by A. H. Heald. A. Gale's four-story brick addition, 40x60 feet, to his building on Randolph, between Wells and Franklin, cost \$5,000. The J. B. Rice theatre on Dearborn, between Randolph and Washington, 80x100 feet, cost \$11,000. The roof and cornices were formed of galvanized iron. Architect and builders were the same as employed in the erection of the Tremont house. The Freer, Dyer, Van Osdel & Carlos Haven four-story brick block, on State and Randolph, cost \$10,000. J. M. Van Osdel designed, and Malcom, Page & Robinson erected this house. The Andrews & Myrick three-story brick stable on Randolph street, between State and Dearborn, cost \$5,000. S. P. Warren's four-story brick block on Randolph, between Clark and Dearborn, 50x60 feet, cost \$7,000. It was designed by Van Osdel; C. & W. Price were the masons, and Boggs & Smith the builders. Peter Shuttler's wagon factory on Franklin, between Randolph and Washington streets, was a four-story brick, 40x60 feet, erected at a cost of \$5,500. Dr. Brainard's three-story brick on Clark, between Lake and Randolph, 20x62 feet, cost \$4,000. Joseph Berg's three-story brick on La Salle, between Lake and Randolph, cost \$2,000. W. Hilderbrand's four-story brick store on Lake street, between Franklin and Market, was designed by E. Burling, and built by A. C. Wood for \$3,800. The Sylvester Marsh three-story brick packing-house, on the corner of North Water and Wolcott streets, cost \$3,000. The first stone building was the Armstrong, three-story warehouse on West Water street, between Washington and Madison streets, built by A. S. Sherman, mason, for \$3,000, as a shipping house. In 1850 Horace Norton and Joel C. Walter erected a stone building, 40x80 feet, three stories high, on the northeast corner of Dock and River streets. Slips were cut in the basements of the two last named buildings, to admit canal boats from the river. The large elevators of Flint & Wheeler, Munger & Armour, Gibbs, Griffin & Co., all frame; the Galena, brick; the Illinois Central elevators of 1855-6, brick, and the Northwestern, on the river at Indiana street, in 1857, constructed of 2x6 inch scantling, laid in horizontal courses, and nailed after the idea of Alex. Miller, were all erected. This latter idea was found very practical and came into general use.

The Bull's Head at the old stockyards, stood at the corner of West Madison street and Ogden avenue, from 1851 to its demolition. It was built for Matthew Laffin, Geo. H. Laffin, Allen Loomis and William R. Loomis, by Henry McAuley, a celebrated carpenter and builder of that day. Matthew Laffin was his own architect, and managed to have this three-story, box-like frame structure, erected at a cost of \$6,000. Apart from the little stockyards adjoining, and the farmhouse, near Harrison and Laffin streets, there were no buildings on the prairie. West of Philo Carpenter's house there were only a few cabins; yet this prairie land cost the Laffins \$210 per acre, in 1849, the total, \$21,000, for 100 acres to be paid within twenty years.

The stockyard buildings were crude, indeed, being a collection of a few sheds, a large barn, and a number of pens. With the exception of Jackson's pens, on State street, near Twelfth street, the yards extending from Madison street to Union park, formed the central cattle and meat market, and continued to hold that position until 1858, when they were moved to a point below Carville, now known as Cottage Grove avenue and Twenty-ninth street.

Grace Church Protestant Episcopal society erected a house on the site of the present Inter-Ocean Building, in 1851, which was moved to the corner of Wabash avenue and Peek court in 1856, where it was enlarged and remodeled. After using this remodeled building eleven years the ground and building were sold.

George Steel's warehouse, on the north branch of the river, between Wells and Franklin streets, and G. S. Hubbard's warehouse, on the north branch, above the old Galena depot, were evidences of advancement toward permanent warehouse buildings.

The large brick building on Wabash, known as the Catholic Orphan asylum, was designed by J. M. Van Osdel and built by Augustine D. Taylor, with Peter Page, as mason. Joseph Matteson erected a five-story brick building, eighty feet on Randolph and ninety feet on Dearborn, designed by J. B. Van Osdel, for hotel purposes. Each front was surmounted by a galvanized iron pediment and cornice, while the roof was also of this iron. Robert Maleom was the mason and Shepherd & Johnson builders.

A synagogue was erected at the corner of Clark and Adams streets, at an outlay of \$2,000. The Scandinavian meetinghouse on the west side was designed by T. Knudson, and completed in 1850—Jenny Lind donated the funds to finish the building. St. James' Church, on the north side, was remodeled in 1850, after plans by T. Knudson, at a cost of \$4,000. Rev. S. P. Skinner had a brick dwelling erected on Wabash avenue, at a cost of \$2,500; S. Lind, a brick dwelling on West Washington street, at a cost of \$4,000; L. P. Hilliard one on Wabash avenue, same cost; George Grubb, a similar building on this avenue; Nelson Tuttle, one on Michigan avenue, which cost \$3,500; B. W. Raymond, one on Wabash between Adams and Monroe, and T. B. Carter, one between Adams and Jackson, each costing about \$4,000. H. Magie and W. Newberry had cheap brick dwelling houses erected on the north side, from plans by H. Burling.

Building enterprise was not confined to the individuals or associations named, for everywhere frame buildings or small brick structures were "going up," until Chicago was known

as the city to which a young western town was added every day. Generally the architecture was simple, often rude, and without noteworthy features, except perhaps the moldings.

The Courthouse and City hall, built in the center of the public square in 1851-3, after plans by J. M. Van Osdel, had the stone for the entire exterior walls brought from Lockport, N. Y. At this time quarries at Athens or Lemont, twenty-six miles distant, had been opened: but were not sufficiently developed to furnish all the stone required for such a large building. The corner stone was placed in September, 1851, and the building was completed in 1853 at a cost of \$111,000. This Romanesque-Byzantine structure was three stories and basement in height, with north and south projections from the central square, 50x60 feet, and east and west projections 32x60 feet, thus giving a length east and west of 164 feet, and a breadth north and south of 130 feet. Tuscan pilasters extended from the band to the first cornice, while piers marked the attic or third story, and carried modillions bearing the entablature. A pediment capped each of the four projections, and above all was a well-proportioned cupola, the exterior gallery of which was supported by fluted columns. Two low domes marked the east and west fronts; while the entrance on each of the same fronts showed a stilted arched doorway extending from the level of the first floor to the spandrel below the third floor. Wyat and single-arched windows in the attic story and Venetian windows in the recesses, as the projections or corners of the interior square may be called, contributed to architectural detail. In 1857 a story was added to the east half of the building; in 1870-71 further additions were made, and the City hall was completed, the style of the original building being observed, except in the entrances and pediments—heavy porticoes and Venetian parapets being substituted. This was one of the best specimens of architecture in the city at that time.

The brick buildings erected prior to 1851 were only remarkable for their severe plainness. There were but few capitalists, and the cheapest building was the one searched for by owners. Again the nearest developed quarry was forty miles away, at Joliet, which was not placed in communication with Chicago, by water, until 1848. The courthouse opened a new era in the building life of the city.

The North Presbyterian church house on Clark and Michigan streets was a frame building in Gothic form with a nondescript tower or steeple. It cost \$2,000, and was used until 1852, when the society erected a larger house of the same pattern, at a cost of \$3,000, on the southwest corner of State and Illinois streets.

The Welsh Calvinistic Methodist Episcopal church built in 1852, on Desplains street north of Randolph street, was the regulation little frame shanty of the period, 30x40 feet, and cost almost \$800.

The Waterworks erected in 1852-3, presented architectural forms in the rough. The early Norman-Gothic style was observed. There were the gabled roof, the arched window and door openings, the central tower and the louver boards. The main brick building was 40x50 feet, with north and south wings, 30½x40½ feet each. The square tower was carried upward, in three diminishing stories, 136 feet, from a 14-foot square base to an 11-foot square coping.

Half of this tower was devoted to the stand^d pipe and half to the smoke stack; so that Engineer McAlpine gave a building to the city at once useful and ornamental.

In August, 1853, the corner stone of the brick church building of the Holy Name congregation was placed. As completed in the fall of 1854 a fine Gothic structure, 84x190 feet in area, composed of Milwaukee brick, with heavy stone facings, a tower and steeple 245 feet in height, heavy stained-glass windows and elaborate interior decorations, was presented—the congregation paying therefor, \$100,000. The irascibility of Bishop O'Regan made itself felt during the erection of that beautiful structure as it did in the case of the removal of the St. Louis building. The fire of 1871 destroyed this monument to the highest architectural work of the Chicago of that day, together with the great educational buildings which clustered round it.

The English Protestant Episcopal church of St. Ansgarius, of the Swedes and Norwegians, built a Scandinavian frame structure (35x50 feet), in 1851, at the corner of Franklin and Indiana streets. The communion set, presented by Jenny Lind, was the only thing of art connected with this building. In 1858 the two divisions contended for possession of this set; in 1859 it became a free church, and in 1864 the Swedes became owners of the only Swedish Protestant Episcopal house in the United States. This building was burned in 1871.

The Maxwell Street German Methodist Episcopal society purchased a small, rough-looking structure in 1852 on Washington and Jefferson streets, which they moved in 1853 or 1854 to Harrison and Aberdeen streets. The total cost of removal and repairs was \$200, so that the price, taken as an index, indicates the ideas of art which then obtained. In 1864 the building was sold and a frame house, 45x65 feet, resting on a brick basement, was erected at a cost of \$7,000. The so-called tower of this structure was a low, unsightly affair, something like what the soldiers, then in the field, would raise for amusement.

The Van Buren Street German Methodist Episcopal society purchased two lots on Griswold and Van Buren streets in 1852 for \$1,400, on which they erected a barbarous little shanty for worship. Two years later it was removed and the building of a large frame house on stone basement with tower and steeple was almost completed, when the Chicago & Rock Island Railroad Company offered \$15,000 for the property. This was a wind-fall indeed, but the shrewd Germans did not put all the little dollars in their pockets, for two fifty-foot lots on Van Buren and Fourth avenue were purchased, and thither their new building was moved. It was swept away in 1871.

St. Michael's Church (German) was built on the northwest corner of North avenue and Church street in the summer of 1852 at a cost of \$750, exclusive of the belfry and bell. It was a plain frame structure, but beautiful in its interior decoration. When in 1870 the great brick church building was completed on the southeast corner of Hurlbut and Eugene streets, the old house was moved close by, where the fire of 1871 found it. The building destroyed was 80x200 feet, with heavy tower surmounted by a pointed roof rather than a steeple. It cost \$200,000, and so thoroughly were the walls constructed that when the fire of 1871 rose within and round them, they stood the severe test and were ready to receive the roof and stee-

ple so soon as cooled. Since that time over \$150,000 have been judiciously expended on buildings and decorations connected with this church, rendering it one of the wonders of Chicago, and in many respects the peer of many of the more modest of foreign religious structures.

The Rock Island and Michigan Southern Railroad depot, of days before the fire, was the original of the building erected on Van Buren street after the fire. The same rock-faced Illinois stone, in rectangular blocks, the heavy quoin stones for the eleven corners of the three front and two rear pavilions, the shapely pavilion roofs with Wyatt dormer windows, the pretentious entrance with annulated shafts, the archivolt of windows carried out in quoin stone, and the shed extending south from the main building, merited preservation rather than destruction. It was begun in 1854 and destroyed by fire in 1871.

The Illinois Central depot, designed by Otto Matz, was a larger and finer building than the Van Buren street depot of that day, but the fire of October 9, 1871, lapped it up, and the directors were satisfied with its ruins for depot purposes up to 1891. They made the punishment fit the crime, for in their determination to save the dollars art was ignored by them, as the ruin of twenty years' standing explains.

Quinn Chapel Methodist Episcopal society built a house in 1853, on Jackson street and Fourth avenue, at a cost of \$5,000. Old settlers remember that house, the troubles with the lot and subsequently with the building, organ and congregation. How \$5,000 could be expended on such a structure interested the inquirer more than the house itself.

The First Baptist society having lost their old house, a new building took its place before the close of 1853 at a cost of about \$30,000. Who the architect was is not known to the writer, but it is not material, for he gave to the society a building (rectangular and flat-roofed) with a spire set upon the front center of the roof, which a boy might design and any set of common laborers construct. At that time a few trees and shrubs grew in front and rear of the new building; while on the other side of La Salle street a line of healthy maples offered shade and ornament.

In 1850 the trustees of the Tabernacle (Baptist) desired to establish their house on the West Side, and on June 26, 1851, fire destroyed the first Tabernacle, thus saving the cost of moving and affording means for the erection of a better building. A site was selected on the east side of Desplains, between Washington and Madison streets, and there a Gothic structure, 44x72 feet, surmounted by a short quadrangular tower, was completed in February, 1853, at a cost of \$5,840. In 1864 the Second Baptist church took in the Tabernacle and became the owners of the First Baptist building on La Salle and Washington. This they moved to the southwest corner of Monroe and Morgan streets. During the pastorate of Dr. E. J. Goodspeed many improvements were effected in the building and equipment.

The Owen Street Methodist Episcopal society erected a low frame house, 25x35 feet, on the corner of Sangamon and Owen streets (changed to Indiana street in 1860), in 1852 and moved to Ada street in 1865, where it was taken down to make way for a building of some pretensions, and sold to the Norwegian Methodist Episcopal society.

The Zoar Baptist church was built about 1853 at the corner of Fourth avenue and Taylor. Its style of architecture was not equal to the regulation southern negro church of a rural district. There was no trouble in moving it to the corner of Harrison and Griswold streets, where, in 1865, it was surrendered to profane uses.

The original church building, known as St. Francis d'Assisium was erected in 1853, at the corner of Clinton and Mather streets at a cost of \$2,000. It was a substantial frame structure, showing some ornamentation, and was used until 1867, when it was donated to St. Paul's congregation.

The old Masonic Temple, 83 and 85 Dearborn street, was commenced May 18, 1854, and dedicated June 24, 1856. This was a four-story-and-basement building with pretentious Norman entrance carried from level of sidewalk to the first band and with well arranged interior. Two single windows, each side of a central double window, marked each story above. Each window was separated from the other by pilasters with Tuscan capitals at the second band, Corinthian capitals at the third band and Roman-Doric capitals above.

Odd Fellows Hall, 98 and 100 Randolph street, was begun in 1852, and dedicated February 22, 1853. It was a plain building, erected for use rather than ornament.

Myrick's castle, built in 1854, at a point 100 feet north and east of the intersection of Thirtieth street and Vernon avenue, was the first brick dwelling house erected in that neighborhood or within a mile of its site. Hollis Newton's two-story frame tavern (known as the Empire house) on the lake shore, near the foot of Twenty-ninth street, was then a landmark, as it had been for years before, and in 1837 that building, with all the land between Twenty-sixth and Thirty-first streets and the lake and South Park avenue was purchased from him for \$500 by Willard F. Myrick. The nearest dwelling, even in 1839, was Henry B. Clark's cabin on Michigan avenue, between Sixteenth and Eighteenth streets. This and one other cabin, south of Van Buren street, west of Vernon avenue with a few cabins then standing at Bridgeport showed life on the prairie. So bleak was the place that it was selected for the hanging of John Stone, the first murderer sentenced to death in Cook county at a spot on South Park avenue just north of Thirtieth street. After the erection of Myrick's castle, Lauren and Henry Groves opened a tavern and stock pens, and up to 1861, when the barracks were erected on Grove's land, there were no buildings between Thirtieth street and the tavern. John Smith's Ten Mile house was far away south on Vincennes road. About 1840 the old Empire house was moved from the lake shore to Cottage Grove avenue and Twenty-eighth street, where part of the building was standing in 1886. In 1844 Myrick established a race track between Twenty-sixth and Thirty-first streets and Vincennes and Indiana avenues, which brought him trade, while the accretionary action of the lake added fifteen acres to the property between 1837 and 1851.

The Plymouth Congregational church, completed in January, 1853, on the southwest corner of Madison and Dearborn streets, was a similar structure to that raised by the Swedes and Norwegians on North Franklin street: but owing to its comfortable interior, cost \$2,500, or three times as much as the little church building just referred to.

The South Congregational society, of Carville, (Twenty-sixth street and lake shore) in 1853-4 erected a frame building on the northeast corner of Twenty-sixth street and Calumet avenue, at a cost of \$2,500, exclusive of the lot. It was 36x60 in area, well finished interiorly, with an exterior lavish in plainness.

The New England Congregational society erected a frame house, 40x55 feet, at the corner of Indiana and North State streets in 1853-4. It was similar in style to the three older buildings of this denomination, and won from the building wits of that day the title "Congregational style."

The First Swedish Baptist church purchased a little schoolhouse at the corner of La Salle and Erie streets in 1854, and worshiped in that cabin until 1858, when they moved it to Bremer street, where it was burned in 1861. In 1864 the organization destroyed itself and its architecture.

The first Swedish Methodist Episcopal building was that on Illinois near North Market, erected in 1854. It cost about \$300 and was one of the pieces of architecture which the great fire went out of its way to destroy.

St. Paul's Evangelical United church building of 1846-7 is referred to in the sketch of St. Paul's Evangelical Lutheran buildings on the southwest corner of La Salle and Ohio streets. In 1854 an architect named August Bayer was called upon to plan a new brick house, and August Wallbann to build according to such plans. It was completed early in 1855, in accordance with the "highest ideas of art" held by the immigrants, substantiality being the main object; but it may be said that it was infinitely superior as a worship house to any which the pioneers of Connecticut or Massachusetts erected within 150 years of their immigration. The fire of 1871 destroyed that building, but it was at once duplicated, the new house being completed February 16, 1873.

In 1848-9 the Second Presbyterian society's brick house, which occupied the southeast corner of Wabash avenue and Washington street, was constructed at a cost of \$28,000, after designs of Renwick of New York, by Asa Carter, constructional architect. In 1855 the lot and building were sold, and a Norman structure, south of Van Buren street on Wabash avenue, was erected. The exterior was Lemont stone, then called "Athens marble," the front showed some excellent sawing in stone, and the interior, 63x97x50 feet, some fairly good decorative work in wood and plaster. The building was opened in October, 1857, though not completed until 1868, at a cost of \$115,000 exclusive of the \$16,000 paid for the ground, and stood until October, 1871. The two towers were tastefully built and fully in accord with the ideas of Chicago architects in 1868.

The First Congregational church was constructed in 1852 on Washington street near Union street. It was burned in June, 1853, and architecture did not mourn the loss. A second house, much cheaper than the first, was built on Green street near Washington, and in 1854-5 a large stone-and-brick building was erected on the corner, north of the little frame house, at a cost of \$40,000.

In 1856 the First Norwegian Evangelical Lutheran house on Superior street was sold to

the Swedish Lutheran society for \$2,000. With this large sum of ready cash they erected a brick house on Franklin and Erie streets at a cost of \$18,000. It was warmer in winter than their former building, and was used for worship up to a few hours before the fire of 1871 embraced it.

The Union Park Baptist chapel of 1855 stood on Lake street between Sheldon street and Bryan place. It was a little frame building with the characteristics of the Zoar society's building. Just before the war this box-like structure was moved to the northeast corner of Lake and Sheldon streets, and subsequently to the corner of Superior and Noble streets. In 1874 this society was consolidated with the Ashland avenue society under the title, Fourth Baptist church. Their house of worship on Paulina and Washington streets was erected during the war.

The Berean Baptist house, built in 1857, stood on Jackson street between Desplaines and Halsted until 1858, when the cadaverous frame structure was moved to a point on De Koven street west of Desplaines.

The years 1853-6 were golden days of enterprise. The houses of 1850 were improved, and a better class of business and residence structures appeared. In 1855-6 the adoption of a grade for the city and the great system of public works then inaugurated necessitated changes in the old system of building, and in several cases old buildings were removed to give place to new ones.

The project of building a home for the University of Chicago took shape in 1856. This building stood on ten acres of ground (donated by Stephen A. Douglas in 1855), bounded by Cottage Grove and Rhodes avenues and College and University places. The work of construction was begun July 4, 1857, and the house was completed in 1865. The plans were made by Boyington & Wheelock. Rock-faced Lemont stone was the material used, and within two years a marvelous pile of masonry rose above the prairie, looking out upon the lake. The location loaned a beauty to that eccentric castellated collection of rock, and for a little while chance gave the college prosperity; but returning shadows grew thicker and in 1889-90 the grounds and buildings passed out of the hands of the trustees. In the latter year the building itself was taken down and the material sold.

The First Desplaines Street Methodist Episcopal church was the building on Polk and Clinton streets, erected in 1851, and moved in 1854 to the southeast corner of Harrison and Foster streets. In 1857 the primitive building and the two lots were sold for \$3,500, and in turn the building was sold for \$150. In July of that year their new frame house, 45x70 feet, at 241 and 243 South Desplaines street, was completed at a cost of \$5,200, the spire or steeple being its only architectural feature. In 1865 the building was moved to Maxwell street and sold to the Evangelical Lutherans.

The Westminster Presbyterian Church Association erected a small frame structure on their ground, Dearborn and Ontario streets, in 1857, where the stone foundations of their proposed house already stood. Before the war this frame house was converted into a parsonage, and a larger frame house was erected on the corner of the lot.

The old Taylor Street Sunday-school house, between Third avenue and Fourth avenue, then Buffalo street, was the first home of the Olivet Presbyterian church, in 1856. In the fall of that year this society purchased the Universalist chapel on Washington street for \$2,750, and moved it to Wabash avenue, 100 feet north of Twelfth street, where it had an east front. At the close of the war a two-story brick house was erected on the corner of Wabash and Fourteenth street at a cost of \$85,000, the same which was sold in later years to the Wabash Avenue Methodist Episcopal Association. The old Universalist building was sold on the completion of that brick house, and removed to Wabash avenue and Sixteenth street, where it was converted into a business house.

In 1855 the first German Emanuel church of the Evangelical Association was erected on Polk street and Third avenue. After its destruction in the fire of July 14, 1874, the society purchased a site on Dearborn and Thirty-fifth streets, to which an old frame structure was moved.

In 1856-7 the Dorman building (ninety-one feet on the river and Market street, and eighty feet on Randolph street) was erected. It was scarcely touched by the fire of 1871.

In 1856-7 the old Baltic or Colby hotel, at the southwest corner of Dearborn and Randolph, gave place to Howgate's Metropolitan hotel. The owner, Howgate, was an employe of Isaac Speer, the jeweler, at 77 Lake street. His stealings from Speer were extensive, so much so, that the proceeds of his thefts were sufficient to build the Metropolitan house. When that building was approaching completion Howgate's thievery was unearthed and the criminal arrested; but the prosecution was hushed when the thief transferred his title and interests in the building to the employer he had been robbing for years.

St. John's church (English Protestant Episcopal) erected a little frame building, 30x65 feet, in 1856, and in 1857 it was enlarged and a parsonage erected. The building of 1856 was so severely primitive that the improvements effected the year after and in later years, made little impression on its plainness.

In 1856 the Edina Place Baptists changed their name to the Third Baptist church, and erected a building for worship at the corner of Edina Place (Third avenue and Harrison street). The building was painfully plain, even for Third avenue of that period, and the people in the vicinity were pleased to see the house moved to the northwest corner of Wabash avenue and Eighteenth street. The members were equally well pleased, for with change of location they changed the name to Wabash Avenue Baptist church.

In 1856-7 a Gothic building, on the southwest corner of Wabash avenue and Van Buren streets, was erected for the First Universalist society, after plans by W. W. Boyington. It fronted 70 feet on Wabash and extended back 108 feet; the tower and spire rose from the center of the front to a height of 175 feet; two flanking or corner towers, capped by minarets, also marked the front, and in each of them, as well as in the main tower, was a gateway or door. The rock-faced Lemont stone building cost about \$60,000, and was the first true Anglo-Gothic structure erected in Chicago. The fire of 1871 swept away the wood work, leaving the walls, the central tower and the two flanking towers, standing.

The second building, erected by St. James Protestant Episcopal society, on the southeast corner of Cass and Huron streets, was commenced in 1857, and completed in 1870, at a cost of \$80,000. This stone building was designed by an architect, and therefore showed some attention to detail, and presented some artistic features. During the ensuing fourteen years many improvements were effected, the tower finished and rich decorations introduced; but the fire lapped the edifice up, as if it were a tinder-box, the tower alone not surrendering.

The George Steel building, of 1856-7, on Water street, at the foot of La Salle, was one of the early large brick structures. On the third floor a room 50x80 feet was fitted up for board-of-trade purposes. The Newhouse building, just west of Steel's, was completed in 1858, and in it a large room was arranged for the Board of Trade.

The five-story iron block on the north side of Lake street, east of State, was completed and occupied in 1857, the merchant tenants being Buell, Hill & Granger, Wadsworth & Wells, and Williams, Case & Rhodes. The first floor was devoted to storerooms. Thirty-three fluted Corinthian columns, and two square piers or pilasters, one at each end, supported the first band-course, while the door and window frames were square and well recessed. The second band, a mimic balustrade, was supported by thirty-three pilasters and two heavy corner piers. Between each set of pilasters was a double-arched window with archivolt formed upon a large arch springing from small Corinthian columns, the keystone of which extended to the soffit of the balustrade. The front of the third floor varied from that of the first or the second, in the fact that it was a series of archivolts, the arches of which supported the third band, except in the center of the front, where a heavy pilaster was used. The fourth floor front, smaller and lower in detail than the second, showed precisely the same architectural form as the second, while the fifth floor front was the same as the third, the arches supporting the upper cornice. It was a noble building, and the suggestor, in fact, of the more ornamental buildings of *post bellum* days. The general character of the facade was Venetian Renaissance.

A second iron building, opposite Wadsworth & Wells, or on the south side of Lake street, east of State street (Nos. 53 and 55), showed twenty-one iron columns, with twenty arches springing from Doric capitals supporting the superstructure. Above this the pilasters reigned, carrying story after story to the top of the fifth, where each received a heavy bracket to support the cornice. The round arch of the Romanesque was overmastered, except in the lower story, by the rich pilasters, heavy capitals and ornamental architraves of the Roman style. It was the center of the millinery goods trade—Benedict, Millary & Farnham; Savage, Keith & Co.; Snow & Co.; Harmon, Aitkin & Gale; B. W. Raymond & Son, and Fisk & Ripley being the principal tenants in 1857.

Other iron buildings of the same class, referred to in the chapter on structural iron works, were designed by J. M. Van Osdel, in 1856-7, and iron fronts became common in Chicago.

The Marble block occupied the north side of Lake street, west of Clark. It has its counterpart to-day on every street. The heavy iron store front, common even now in the

West, was introduced in that building, and four stories of stone work carried above the iron to an ornamental cornice, showing the windows neatly capped or labeled with cut and moulded stone. D. B. Cook & Co., the booksellers, J. B. Shay and J. A. Smith & Co. occupied the lower or store floor, while the upper floors were rented for various trade purposes. West of this building was Garfield's hardware store, a three-story house; next west Burley's four-story building with labeled window heads, and adjoining Burley's a Greek-Roman-Colonial structure of three low stories. The masonry was ashlar, and the general features Florentine-astylar.

The heavy Gothic church building on Twelfth and May streets is remarkable in many respects. In the spring of 1857 a temporary house for worship was erected on Eleventh street, and on its completion, in July, the foundations of the present great building were begun, under the superintendence of Dellenberg & Zucker and J. M. Van Osdel. Within three years it was completed, and there stood out upon the prairie as a mirage, an architectural pile, large and stately, 125x236 feet, with nave 61 feet high. The principal tower or belfry is to-day without a peer in the West, and for the \$130,000 expended on the building, a house was given to Chicago, which, for all time, will stand as the sole monument to the truer *ante-bellum* architecture here. The stained-glass windows, frescoes, paintings and altars of this church must be seen to be appreciated. Each transept shows a great English Gothic window of stained glass; the clearstory is supported by massive columns, and the roof is vaulted or ribbed and decorated with rich frescoes. Parpeyned buttresses, two heavy towers, one crowned with a Byzantine dome, and a mediæval entrance point out the fact that where there existed a will for architectural adornment in 1857, there was a way. The traveler of continental Europe will find here one church, at least, which may remind him, in a small measure, of the great cathedrals he has seen during his journeyings, and, further, may learn that all this work was accomplished during the dark days of the panic of 1857. The seating capacity of the church is about 4,000; the membership is about 14,000. In the neighborhood of the church are a number of buildings, each one important. The St. Ignatius college building, just east, is a well-designed brick-and-stone structure, erected at a cost of over \$200,000. Within it is a hall, with a seating capacity of 1,500, a gallery of 400 seats; thirty class-rooms, museum, library, dormitories, chapel and living rooms for the faculty and boarders. Reid & Sherwin were the mason contractors, and M. Donohue the carpenter contractor for the church building.

The State Street Methodist Episcopal building was in fact a portion of the frame house of the Second Presbyterian society, moved in 1851 to the northwest corner of State and Harrison streets. In 1857 W. M. D. Ryan came to remove this miserable piece of architecture, and in 1857 the house on the northwest corner of Wabash avenue and Harrison street was brought into existence, at a cost of \$65,000. It escaped the fire, was used as the United States postoffice until 1874, when it fell in the second great fire. The United States paid \$75,000 rent for the whole term, and the insurance companies paid \$30,000.

The Christian church was erected on Monroe street, east of Center avenue, in 1858.

Of course it was a petty frame building, 36x58, with a little acroterialess cupola stuck on the point of the front gable and a chimney on the point of the rear gable. In 1858 the Christians may have considered this frame house a thing of beauty, but the aspiring West Siders did not look upon it in that light.

In 1857 McVicker's new theatre was completed; but this humble structure was so out of date seven years later, that the sum of \$25,000 had to be expended on its reconstruction.

The South Presbyterian building on the corner of Congress street and Wabash avenue, was a one-story frame, with a smaller building of the same character adjoining it on the west. Even in 1856 it was considered unworthy of notice as a building, and in March, 1859, it was moved to the corner of Jackson street and Third avenue, where it was remodeled for mercantile, tenement and church purposes. The fire destroyed it.

The Norwegian Evangelical Lutheran church—"Our Savior's"—was erected in 1858 on the corner of Erie and May streets, and in 1859 a schoolhouse was built. Nothing less than the mercy of the dedicatee could have preserved these terrible pieces of architecture from destruction at the hands of an outraged profession. They withstood the gibes and sneers of passers-by, and were sold in 1871 to make way for better buildings.

The old Railroad chapel which stood just south of Van Buren street on Griswold was erected in 1858, and galleries introduced in 1863. After the close of the war a brick house was erected opposite the chapel, at a cost of \$21,000, which was used until swept away by fire in 1871.

The First German Methodist Episcopal society built on Clybourne avenue in 1857 a frame house 30x50 feet, at a cost of \$2,000. Their old cabin of 1848, on Indiana street was too insignificant to be noticed. Their new house was not much better, so that in 1863 a spirit of decency urged the members to move it back, and build on its site the two-story brick, 40x70 feet, at a cost of \$10,000. The monstrosity destroyer of October, 1871, swept the whole collection away.

The New Jerusalem or Swedenborgian society purchased a school building at 69 Adams street in 1855, which was destroyed by fire in December, 1857. In 1858 the Second Presbyterian house was purchased and moved east of State street to Harrison street. In 1862 the Swedenborgian temple on Wabash avenue and Adams street was completed at a cost of \$18,000. It was a stone-and-brick structure in Gothic form, 50x70 feet, with tower and spire 175 feet in height. From 1862 to October, 1871, it was used by the society and then reduced to ashes.

The Union Park Congregational church erected a small frame building on Washington, near Wood street late in 1858, which was moved to the northwest corner of Ashland avenue and Washington street in 1859, and in 1865 to the southwest corner.

In 1859 the congregation of the Immaculate Conception parish (Catholic) erected a \$17,000 building near the corner of Franklin and Schiller streets. In July, 1871, a steeple was placed above the tower, and in October the fire wiped out one of the first pretentious buildings in that section of the city, leaving the stone basement.

Unity church, or the North Unitarian church, built a frame house for worship on Chicago and Dearborn avenues in 1859, at a cost of \$4,000.

The Church of the Holy Communion (Protestant Episcopal) erected a small frame house with Gothic pretensions, on the southeast corner of Wabash avenue and Randolph street, in 1859. In 1868 that building was moved to Burnside street, south of Twenty-ninth, where a basement was erected.

In 1858-9 the third building of the First Methodist Episcopal society was erected at a cost of \$70,000. It was destroyed in the great fire, and necessitated the erection of a frame house on Clark and Harrison streets, pending the erection of the Methodist church block. Immediately after the fire, the four-story stone-front building on Clark and Washington streets was erected, at a cost of \$130,000. Together with being a large commercial block, it contains a large auditorium for worship, with pastoral and official quarters.

In 1860 a lot on the south side of Jackson street, east of Wabash avenue, was acquired, and thereon a stone-front building (71x150 feet) was erected, for Trinity Protestant Episcopal society, after designs by J. V. Wadskier. Like the front, the lower walls of the towers were constructed of Lemont stone, but the upper sections were of brick, like the side walls and rear. Side windows were not provided for, as the light for the auditorium was supplied from the glass roof. In some respects it resembled the present St. Mary's church, on Wabash avenue and Eldridge court, but the towers, lanterns and finials, were wild adaptations of all that was bad in the early English or Norman, and in the Elizabethan styles, so that the fire of 1871 lapped it up greedily.

The Republican wigwam, of 1860, was erected by the Lincoln & Hamlin club, on a lot at the corner of Lake and South Water streets, at the head of Market street. This wooden building, 80x150 feet, two stories high, with flanking towers—stood as a memory of the times and manners up to October 9, 1871, when fire swept it away.

The Desplaines and Van Buren street Congregational church was a shanty erected in less than seven days, and opened for worship May 13, 1854. The building was enlarged in 1862, and converted into a Presbyterian meetinghouse, as the majority of the members became members of the Edwards Presbyterian society.

The building known as SS. Peter and Paul's church, the first cathedral of the English Protestant Episcopal church, on this continent outside of Canada, dates back to 1861, when the Church of the Atonement was transferred to the bishop, who named it the Cathedral. The building was enlarged, remodeled and decorated, during the years of the Civil war.

In February, 1861, the second house of the North Presbyterian church was abandoned, and possession taken of the pretentious Romanesque brick house on Cass and Indiana streets. This building was 71x90 feet, with walls 38 feet and apex of roof 52 feet. The tower was 24 feet square, 104 feet in height, with octagonal spire, 90 feet above. The second tower, 16 feet square and 100 feet high, appeared unfinished until the great fire removed it.

The New School Calvary Presbyterians built a small frame house on Indiana avenue, south of Ringgold place, in 1860, which they moved, in 1862, to Indiana avenue and Twenty-second street.

The Edwards, or Seventh Presbyterian society, erected a little building on Halsted and Harrison streets, in 1862, which was exchanged, in 1867, for the Free-Will Baptist house, on Peoria and Jackson streets.

St. Peter's church (Catholic) erected a large brick building, in 1863, on Clark and Polk streets, in which the architecture and decorative art of the church at Asti, Italy, are apparent. The style, though borrowed from Asti, is not Italian. The cost was \$45,000. In 1864 the school building was erected at a cost of \$7,000, and the residence in 1865, at a cost of \$5,000. The fire appreciated art and did not touch this property.

The German United Evangelical (Zion's) society moved the old St. Paul's building to the corner of Wilson and Clinton streets; but in 1863 a new house was erected on Union street near Fourteenth street, and five years later a brick schoolhouse was built. A branch house was erected on Union and Twelfth streets in 1864.

The beginnings of a new house were made in April, 1863, on Wabash avenue north of Hubbard court for the First Unitarian society. This escaped the fire of 1871 and that year was purchased by the Wilmarths and converted into a plumbers' supply store. In 1872-3 the house known as the Church of the Messiah, on Michigan avenue and Twenty-third street, was erected at a cost of \$90,000. This is a very neat building and presents several architectural features, then almost unknown in the West.

At the beginning of the war the northwest corner of Chicago avenue and La Salle street was purchased, and in 1863-4 a small building was erected thereon in which to worship, the successor of the Methodist Episcopal chapel of 1847, which stood on Indiana street east of Clark street.

Early in 1864 work on the church of Notre Dame de Chicago, the successor of St. Louis church, was commenced, and the large building at the northwest corner of Halsted and Congress streets was completed early in 1865. This house presented a plain exterior, but within the artist and decorator showed decided taste.

The Park Avenue Methodist Episcopal society erected a small house on Robey street and Park avenue in 1861-2, but in 1864-5 a \$10,000 building was erected on the southeast corner of the streets named, where a lot was leased for ninety-nine years.

In 1864 a brick house, 52x101 feet, with tower and spire 161 feet in height, gave evidence of progress on the part of St. Paul's German Evangelical Lutheran society. This was located at the corner of Superior and Franklin streets and cost, with ground, about \$30,000. The fire of 1871 swept it away.

Christ church (Reformed Episcopal) built a chapel, in 1859, on Monterey street east of Michigan avenue. In 1863 a larger house was erected on Twenty-fourth street; but this was burned in February, 1864, and in 1865 a third building was raised on Michigan avenue, which was damaged by lightning in 1866.

The Chamber of Commerce (old building) was begun in 1864 and completed in August, 1865, at a cost of \$400,000, after plans by E. Burling. For six years and two months that building reigned over all others of its class in the United States and was considered the



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largest and best constructed board of trade building on the continent. The fire of October 9, 1871, reduced it to ashes. The area was 93x181 feet and height 100 feet. From the main door a flight of steps led to the main hall, off which were business rooms. The portico was a composite affair. From this hall a double stairway led to the vestibule of the principal room. This room, 143x89 feet and forty-four feet in height, was lighted by eighteen large windows and frescoed in the best designs known to the Chicago artists of twenty-six years ago. Exteriorly, the original building varied from its successor of 1872. Heavy cut quoin stones were used in pilaster form for the corner and each side of the central window above the first band-course. Norman windows marked the first and hall floors, while in the basement the windows were square. The French roof showed two round windows each side of its clock, and nine on each side, corresponding with the windows in the great hall. The general style was Italian-Byzantine with French roof and Venetian windows.

During the closing four years of the fifth decade, buildings of all descriptions were constructed, and when the tocsin of war sounded that April morning in 1861, Chicago was really a city in extent of territory, in number of buildings and in trade.

During the first three summers of the Civil war, the citizens not only sent forth a great number of men to the field, but also built homes, stores, warehouses, workshops and factories as fast as tradesmen could construct them. In 1864 no less than 6,000 houses were erected within the city limits, at an average cost of \$784 each. A few large houses, of course, were built, including the Board of Trade and nine churches. In 1865 there were 6,370 houses built, at an average cost of \$1,099, including nine church buildings, and in 1866, no less than 6,700 houses, including twenty-four church buildings, were erected, the average cost being about \$1,642 each.

CHAPTER IV.

DESTRUCTION AND RESTORATION.

PEACE to the Union brought peace to Chicago, and made way for the spirit of progress which took possession of the citizens. No sooner was the fall of the Confederacy heralded through the streets of the city than men, hitherto cautious, rushed into the arms of enterprise to follow the example of the Board of Trade in 1864, and none were in advance of the members of that body in the realization of what wealth owed to art, to the municipality and to the individual. This led to the construction of a few large and elegant mercantile houses, several large tenement houses, many fine residences, and drew into the line of improvement religious congregations, school and municipal bodies, and even the Federal government. The "honest public building," the walls of which battled so heroically with the fire of October 9, 1871, and won in the battle, was brought forth, and the movement for general improvement was voluntary, methodical, and decisive.

In 1867 there were 5,000 buildings, including seven churches, erected at a cost of \$8,500,000, and in 1869 there were 7,000, including nineteen church buildings, at a cost of \$14,000,000. At the beginning of the summer of 1868 there were 39,366 buildings within the city limits, of which 35,654 were balloon frames or other forms of wooden buildings. Of this total 3,980 were store buildings, 1,696 saloon buildings, and 1,307 manufacturing shops. The estimated number of buildings in 1869 was 43,920; in 1870, 52,690, and in 1871, 61,000. In 1869 the designs for the Palmer house, the Grand Pacific, the Nixon block, and a few similar structures were completed and the work of construction entered upon. The era of Corinthian columns, colonnades, heavy cornices, attic stories, grand porticoes and other architectural decorations was adumbrative, and men who gathered wealth here were dreaming of building commercial temples equal in beauty to those they had seen at Paris, and religious temples as great as those they had seen at Rome. The city was massive and great already in her dreams of greatness, but her advances were generally too precocious to go unchecked, and the check came.

Crosby's Opera house, as completed in 1865, was the finest building erected in Chicago up to that time, and held its pre-eminent position up to 1871, when it was destroyed. As designed by W. W. Boyington, it was a Norman-Romanesque-Byzantine, four-story basement and French-attic building, with a south front of 140 feet on Washington street, east of State

street. The entrance, twenty-three feet wide, was between great pilasters with Italian capitals. A Norman arch, with heavy sagitta and elaborate spandrels supported the lower part of the entablature, and rich modillions the upper or heavy projecting part, extending to level of third story. Above this were four pedestals carrying large statues, by L. W. Volk, representing Painting, Sculpture, Music and Commerce, and between the pedestals was the extended and handsome balustrade. The central projection was carried through the third and fourth stories to the cornice, which was supported by modillions. Above the cornice rose the central pavilion, with its noble dormer and caryatic pilasters. Two elaborate store fronts on each side of the main entrance, six Norman windows on each side of the central projection of the second and third floors, and eleven smaller windows, resembling an arcade on each side of the central projection of the fourth floor, with the four single dormers on each side of the center of the attic, told at once that the architect and owner were lavish in ornament. Each window had its archivolt or label of rich moulding. The auditorium was 86x95 feet in area, and the height from floor to dome sixty-five feet. This dome, twenty-eight feet in diameter, showed the portraits of the great composers. The art gallery on the second floor of the main building was 30x60 feet, with eighteen feet ceilings. The frescoer of that day exhausted his art on the walls of this house, and Chicago was proud of it.

The Second Baptist church purchased the building of the First Baptist church, and moved it from the southeast corner of La Salle and Washington streets, to the southwest corner of Monroe and Morgan streets in 1864, where it was painted and otherwise restored.

The Third United Evangelical society built a very modest house on Twenty-first street and Archer avenue, in 1862, the same which was moved in 1868 to Wentworth avenue and Twenty-fourth street. In 1884 the society acquired by exchange the Baptists' brick house on Twenty-fifth street, west of Wentworth avenue.

The First Baptist society, after selling the lots where stands now the Chamber of Commerce, for \$65,000, purchased the property on Wabash avenue and Hubbard court in 1865, and thereon a house, which cost about \$150,000, was erected within two years. It was an elegant building that escaped the great fire, only to be consumed by the fire of July, 1874.

The State Savings institution and Garden City Insurance Company's building, 80 and 82 La Salle street, completed in 1866, was a four-story-and-basement house 45x70 feet. It was designed by E. Burling, to cost \$75,000. Lemont stone or Athens marble was used in the front and Milwaukee brick in the side and rear walls. Three sets of double-arched, keystone windows (the arches joining and resting on a paneled pilaster in the center) were in keeping with the one large set of such windows, each side of the entrance. Cut-stone piers were carried from basement to cornice at the corners and at each side of the central set of windows. The portico, perfect in its parts, showing pedestals, Corinthian columns, arch, spandrel and entablature, was too light and small for such a building, while the heavy balustrade above a heavy cornice was as unnecessary as it was ill-fitting such a house. The iron shutters on sides and in rear scarcely warranted the owners in calling their building fireproof.

The Magic building, then on the southwest corner of Randolph and La Salle streets,

was a Milwaukee brick, four stories, basement-and-attic structure. The arched and labeled windows, dormers of the same form in the mansard roof and chaste chimneys, extending from the walls in front of the roof, gave to it an architectural appearance wanting in better houses.

The Metropolitan hall stood on the northwest corner of the same streets. The windows on the ground floor and on the third floor were high, arched openings, while on the second floor they were square. A heavy cornice, with nine chimneys on the La Salle-street front and nine on the Randolph-street front rendered its exterior showy.

The Atlantic Fire Insurance Company's building, south of the old States Savings bank, showed four clear stories, a great mansard attic and basement. The ground floor front showed a series of arches, resting on Corinthian columns, with carved spandrels. A heavy cornice capped this first section. Heavy labeled windows, in a solid stone front, marked the three next stories, and clustered windows, deeply recessed, appeared as dormers. The cornice, roof and parapet presented exceedingly fine work.

At the northeast corner of La Salle and Randolph streets were the large printing offices and binderies of the period. The building was a five-story-and-basement one, with square door and window openings, capped by deep cornice carried on modillions.

On the southeast corner of Clark and Randolph streets was one of the finest stone business blocks in the old city. The corded molding for window frames was introduced here extensively, and carried round every door and window and even attached to the Corinthian columns and pilasters supporting the roof of the balcony. The portico was marked by two Corinthian columns, with corresponding pilasters, supporting a heavy entablature. The quoin stones, cornice, portico and balcony of this block attracted the attention of visitors from Wood's Museum across the street, which was in itself an important building.

The Merchants' hotel, formerly the Stewart house, occupied the northwest corner of State and Washington, and Crosby's building stood next north. The latter, a brick building, was connected with the Opera house, and in architectural design conveyed an idea of the grand building on Washington street. The hotel was a five-story-and-basement brick house. Four Corinthian columns with corresponding pilasters carried a square-balustered balcony. The rectangular windows of the second, third and fourth stories were all heavily labeled, but the fifth or attic story, marked by an abbreviated cornice, showed twelve Norman windows. Between the arches of these windows rested the base of the heavy modillions which carried a heavy cornice. The houses north to the bridge were three and four-story bricks, with the exception of a three-story frame gabled house just north of the Crosby building.

Volk's monument yard and studio, the great pilastered front of Tobey's furniture store and the street railroad company's offices occupied the southeast corner of State and Washington streets. The Volk dwelling, with its Colonial dormer and chimneys, and the ornamental glass addition in front, left the Tobey building in possession of all the architectural beauties of that quarter.

St. Stephen's Protestant Episcopal church purchased an old house, in 1865, which was moved to Forquer street near Blue Island avenue.

The Eighth Presbyterian society erected a house on the northwest corner of Robey and Washington streets in 1865. Early in 1866 it was moved and the beginnings of a \$32,000 building made. In 1885 the second building was refitted and restored.

Grace Methodist Episcopal society built a house on La Salle avenue and Chicago avenue in 1863-4 at a cost of \$25,000. In 1866-8 a larger house was erected of rock-faced stone in the Anglo-Gothic style, with square tower in center and heavy buttresses running to minarets at corners. The fire destroyed the side walls, but left the rear walls and tower comparatively uninjured.

The Olivet Baptist church erected a large house on the east side of Fourth avenue, between Polk and Taylor streets, in 1865-6, at a cost of \$18,000, but it was burned up in the fire of July, 1874. It possessed a few architectural points.

In 1865 the Jefferson street building and lot of the Canal Street Methodist Episcopal society, were sold for \$16,000 and in 1866 W. W. Boyington's plans for the Centenary Methodist Episcopal church on West Monroe street near Morgan were accepted. This \$80,000 building was completed in 1868.

The St. Boniface German Catholic congregation erected a small building on Cornell and Noble streets in 1865 at a cost of \$2,500.

The Fourth society erected a church and school building on Noble street and Chicago avenue in 1864. In 1866 a larger church house was built on this site.

In 1865 the First Synagogue sold lot and building, and purchasing a church building (Grace Church Protestant Episcopal) at the corner of Wabash avenue and Peek court, used it as a synagogue until the great fire swept it away.

In 1865-6 the heavy rock-faced stone Celtic building on Dearborn avenue and White street was erected for the New England Congregational society. The fire of 1871 appears to have approved this attempt at true exterior decoration, and so spared the walls while destroying the roof, floors and interior decorations. In 1874 the work of restoration was begun and in December, 1875, completed.

The Free-Will Baptists erected a frame house on Peoria and Jackson streets in 1864, and in 1865 a larger building was erected there. It was burned December 7, 1865, the night of its dedication. In 1866 a third house was erected; but the primitive appearance of that frame barn could not be tolerated very long, and hence a new building was erected on Loomis and Jackson streets in 1869-70 at a cost of about \$25,000.

In 1866 the North Unitarian church society merged into the Liberal Christian League, and in 1868-9 the double-tower stone house, on Dearborn avenue and Walton place was brought into existence and the old frame building sold to the North Baptist society. The new building cost about \$210,000. The great fire left the heavy walls and towers uninjured; but swept away the steeples, roof, floors and windows. In 1872-3 the work of restoration was carried on, and over \$90,000 were expended.

St. Mark's Protestant Episcopal church on Cottage Grove avenue and Thirty-sixth street was built in 1867, at a cost of \$8,000. Fire damaged the house in 1880, but it was at once restored and a few years after enlarged.

The North Baptist society erected a house on Dearborn and Ohio streets in 1858. This was moved in 1864 to Dearborn and Superior streets. In October, 1867, the society took possession of the Unity church on Dearborn avenue and Chicago avenue, which fell in the fire of 1871.

Potter Palmer's building, occupied by Field & Co. before the fire, was one of the mile-stones of architecture, and Booksellers' Row, the leading book mart of the Northwest, if not of the United States, one of the ornamental buildings of the city. They were constructed of Lemont stone. They were undoubtedly elegant buildings for the Chicago of 1856-71; but to-day their plain ashlar work and attempts at decoration would not win the admiration of a hodman. The fire lapped them up.

The five-story stone-front (Athens marble) building, which stood at 15-29 Randolph street, up to October 9, 1871, was erected in 1866, at a cost of \$400,000, for the Bowen Bros. Three years before this, each of the brothers erected a stone-front dwelling on Michigan avenue—Nos. 124, 125 and 126—thus giving a few of the first important buildings to the city. The house on Randolph street was five stories in height, but, like the dwellings on Michigan avenue, it was destroyed in the great fire. The style was Italian, but of a mixed character.

The large church building on the southeast corner of Twelfth street and Newberry avenue, erected in 1867 for the congregation of St. Francis d' Assisium, was a substantial brick structure 66x160, Gothic in style, with buttressed walls rising 45 feet. In 1875 the steeple, 90 feet high, springing from the square tower, was constructed.

In 1867 the Welsh Calvinistic Methodist Episcopal church sold their cabin of cold and heat for \$3,400, and purchased the lot, 75x95 feet, and house thereon, on the northeast corner of Sangamon and Monroe streets, from the American Reformed church, and in January, 1868, moved into their house.

In 1856 the second German, Emanuel church society erected a house on Chicago avenue and Wells street, which, after the schism of 1867, was sold and a new house erected on Wisconsin and Sedgwick streets, at a cost of \$7,000 or \$8,000. That house was destroyed in 1871, but soon after a \$9,000 structure stood on the old foundations.

In 1866 the Christians purchased the old St. James Protestant Episcopal building on the north side and moved thither. Their own building of 1858 was sold to the new St. Stephen's Protestant Episcopal society, who moved it to a point on Canal street, south of Harrison. The Christians, in 1868, abandoned the north division, and purchasing another old building, known as St. Luke's Protestant Episcopal mission house, on Wabash avenue and Sixteenth street, (this building was, originally, the Universalist church, and subsequently the Olivet Presbyterian house) moved thither.

In 1867 the Plymouth Congregational society completed a building on the southeast corner of Wabash avenue and Eldridge court, at a cost of over \$100,000. This building and grounds were sold in 1872 to the Catholic bishop for \$80,000. As a Catholic building it is the successor of the first church ever erected here, and bears the name, St. Mary's. The style of architecture is a peculiar Norman-Gothic. The front and sides present an

adaptation of the east end of Ely (England) Cathedral and of the front of Zamora Cathedral, but the adaptation is seldom introduced in Catholic buildings and its presence in this instance is due to the original owners. It is a rock-faced stone building of buttresses and pinnacles, with shallow transepts. Corresponding with what should be a clearstory, are two light towers with ornamental spires, abat-vents or finials and pendentives or hanging buttresses. From the cornice of the towers springs the front gable. Corresponding with the corners of the aisles are heavy angle-buttresses each carrying an enriched pinnacle, and on the point or apex of each gable is an acroteria, which originally formed the base of an ornament, but now supports the Roman cross. The entrance is early English or Norman, with heavy quoin stone piers and stilted arch, set in projecting masonry with gabled cap, a miniature of the great gable. Between each of the towers and the heavy angle buttresses, a smaller entrance is found, the arch of which is not so stilted. The windows in the lower story are all labeled; above they show the arch stones and heavy keystone, and may be termed Norman lancet or Early Gothic windows.

The Fifth Presbyterians erected a house on Twenty-eighth street, east of Wabash avenue, in 1867-8, at a cost of \$5,000. The style was nondescript.

The Indiana Avenue Methodist Episcopal church building, south of Thirty-second street, was erected in 1867. In 1871 this frame house was sold and a lot on Michigan avenue acquired, whereon a new house was erected in 1871-2, now known as the Michigan Avenue Methodist Episcopal church—a red brick house with the slightest pretensions to Norman architecture.

The First Scotch Presbyterian house was erected in 1868 on the corner of Adams and Sangamon streets. It was as plain a building as it was cheap. The Thirty-first street Presbyterian church built a small frame house at the corner of Wabash avenue in 1868. It was well designed and constructed. The Western Avenue Baptist church house was erected on the avenue whence it takes the name, and Warren street, in 1868. In later years the little house was improved. Bethany Congregational church, on Paulina and Second or Huron streets, erected a \$3,000 house for worship in 1868. In 1869 a large brick house was erected on Ada street north of Lake street by the Owen Street Methodist Episcopal church.

In 1869-71 the present beautiful house of the Congregational society, fronting Union Park, was erected at a cost of \$125,000. Lake Superior sandstone forms the exterior of the walls. Improvements brought the total cost up to \$200,000 and gave to this central district of the great west division a piece of architecture far in advance of the times.

In 1869 a large building was erected on Indiana avenue and Twenty-sixth street, at a cost of \$26,800, for the South Congregational society. In 1872 this society was merged into the Plymouth church and the same year the combined churches erected the large building on Michigan avenue south of Twenty-fifth street.

The United Presbyterian Memorial Church house on Mouroe and Paulina streets was erected in 1869 at a cost of \$30,000. It is a brick rock-faced structure with high basement. The style is semi-Gothic and Aryan throughout, the three front entrances and the ornamental windows in the gables relieving its simplicity.

In 1869 a building for school and church purposes was erected by the First Baptist society on Division and Sedgwick streets at a cost of \$30,000. That went down in the great fire. A brick house for the Reformed Presbyterian church was erected at a cost of \$15,000, was sold in 1869 and a \$12,000 frame house erected on May and Fulton streets. This latter building was a substantial structure and architecturally in consonance with the west division of that day.

A stone church erected on Wabash avenue, north of Fifteenth street, for Graco Protestant Episcopal church society, was completed early in 1869 at a cost of \$100,000. This new stone Gothic church, now 66x130 feet, with its tower and spire, is an attractive building. The tornado of May, 1876, swept away the spire and otherwise damaged the structure.

In 1869-70 the large brick building, 65x125 feet, on the corner of Sangamon and Harrison streets, was erected for the Berean Baptist church at a cost of \$45,000. This was the first true attempt at ecclesiastical architecture in Chicago by the Baptist denomination. The front, including the two flanking towers, was seventy-five feet in width and became known as the Fifth, and subsequently as the Temple Baptist church.

In 1868-9 a new building was erected for the Bethel society on Michigan street east of Market street at a cost of \$25,000, which was destroyed in October, 1871.

In 1869-70 the new house of the First Congregational society, on Washington and Ann streets, was erected at a cost of \$180,000. The audience room had a seating capacity of 2,000 together with a gallery capacity of 700. Seven entrances formed one of the features of this building. Fire destroyed the house in January, 1873, but the work of rebuilding was at once commenced, and after the expenditure of \$105,000 on house and equipment it was completed in February, 1874.

Trinity Methodist Episcopal church on Indiana avenue and Twenty-first street was built in 1863, but seven years later sold to the Presbyterians, and a lot on Indiana avenue and Twenty-fourth street purchased. On this lot a house of worship was erected in 1870-2.

In 1870 the ground whereon the Wabash Avenue Baptist church of 1856 stood sold for \$38,000, and the work of building a larger house on Michigan avenue south of Twenty-third was entered upon. The house was destroyed in 1879, but soon after was restored at a cost of \$85,000, and the name Immanuel church bestowed upon it. As Dr. Lorimer's church it had the greatest seating capacity of the Baptist houses in this city. It was partially burned May 24, 1891.

St. Anne's original church building was the Jewish synagogue moved from Third avenue and Harrison street to the southeast corner of Wentworth avenue and Fifty-fifth street in 1869 for the use of the Catholic congregation. That building was blown down in the storm of 1870, but re-erected at once.

The Insurance Building, 155-161 Washington street, was completed in July, 1870, after plans by J. M. Van Osdel, at a cost of \$100,000. Amherst stone was used in its construction. It was a four-story and high-basement house, with Corinthian attached columns,

square, heavily labeled windows, two entrances with frontals, galleries, corona and pediments above.

The Holland Presbyterian church, erected a small house on Noble and Erie streets in 1870. The Langley Avenue and Thirty-ninth Street Methodist Episcopal house was erected in 1870, at a cost of \$12,000.

In 1870 the work of building a house for St. John's English Protestant Episcopal society, in keeping with the times, was entered upon. This native stone building was commenced on the northwest corner of Ashland and Ogden avenues, to cost about \$100,000. The Third Presbyterian society completed it, but it was burned in 1887.

The Chicago Medical college building on Prairie avenue and Twenty-sixth street, erected in 1870, at a cost of \$30,000, is noted for its two amphitheatres and modern laboratories. Hahnemann Medical college building was erected in 1870, without much regard to the letter or spirit of architecture. It is a large three-story-and-basement brick house, minus exterior ornamentation.

In 1858 St. Columbkil's congregation raised a small frame house on the corner of Indiana street and Paulina street. This house was used until the completion of the present Romanesque structure, which was begun in 1871, and completed in 1877. The building cost about \$150,000. The first United Presbyterian church house was built in 1871, on the corner of Monroc and Paulina streets. The University Place Baptists built a brick house on Thirty-fifth street, at the head of Rhodes avenue in 1871. It was an outrageously common-place affair.

In 1871 the construction of the present large house of the Norwegian Evangelical Lutheran society, Our Savior, was commenced and completed at a cost of \$40,000. That it is large and has a seating capacity of 1,200, is all that may be said of it. It presents a few architectural points, however, and is very much superior to many of the buildings erected in those days of great houses.

The fires of October, 1871, came to blot out forever the works of forty years, in the south and north divisions of the city, to destroy the little that was beautiful as well as the mass that was odious in the eye of art.

Those fires were fortunate events for the Garden City, as a whole, and none profited directly by them, so much as art and architects, for the flames swept away forever the greater number of monstrous libels on artistic house-building, while only destroying the few noble buildings, of which Old Chicago could boast. The doings of the fire-god here in 1871, were quick and sure, as Whittier expressed it:

"On three score spires had sunset shone,
Where ghastly sunrise looked on none;
Men clasped each other's hands and said:
The City of the West is dead."

The great fire was foreshadowed twenty-four hours by the destructive blaze on the west side. The fire of October 7, 1871, originated in Lull & Holmes' planing-mill, 209 Canal street,

near Van Buren street, a brick building, and burned an area of about twenty acres, or three-fourths of the area between Clinton and Canal, south toward Van Buren; nine-tenths of that between Canal street and the river in the same direction; all the area bounded by Canal street and the river and Adams and Jackson streets; seven-eighths of the area between Canal and Clinton and Adams and Jackson streets, where eighty feet on Adams and 128 feet on Clinton only were left; while on the east side of Canal street, north of Adams street, the 100 feet of the Express Company's sheds were destroyed. The mill where the fire originated; a row of frame dwellings ten in number, belonging to A. Watson, on Jackson street, between Canal and Clinton; Nos. 176, 178, 180, 182, 184, 186 Clinton; Haltslander & Randall's sash, blind and box factory, adjoining the city truck-house, with many small buildings in the rear, were swept away, and the body of a dead woman cremated. On Canal street were destroyed Nos. 189, 191, known as Weigle's vinegar works, the Lull & Holmes mill, Foster's box factory in rear; the Racine Hotel, No. 210; the Union wagon works, 190; Chapin & Foss' shingle and lath mill, Nos. 220-228; Sheriffs & Son's lumber yard, 216-218; the tenement houses at 214 and 212; Holbrook's coal yard, No. 176; Lamson & Cornish's yard, just north of the railroad blacksmith shops; the Wilmington Coal Company's yards. Houses Nos. 38, 42-44, tinder-boxes on the south side of Adams street, and 100 feet of the flooring of the viaduct just completed were burned, with several smaller buildings.

The great fire of October 8-9, 1871, originated in a barn on De Koven street, and resulted in the destruction of property valued at about \$190,000,000. The stormy character of that Sunday night, the inflammable character of the buildings, and the utter failure of the fire department contributed to almost the total destruction of the two principal divisions of a great city, of which Bret Harte wrote:

"Like her own prairies by some chance seed sown,
Like her own prairies in one brief day grown,
Like her own prairies in one fierce night mown."

The fire was first observed at 9 o'clock on the evening of October 8, 1871, and within six hours had seized hold of the business center and north division. To point out more clearly the inflammable character of Old Chicago, the following table, showing the hour at which the principal houses were seized upon by fire, will be only necessary. The first given was destroyed on October 8; the next fifty-seven on October 9, and the last named on October 10:

Point of origin, 237 De Koven street.....	9:00 P. M.	Miller's jewelry store.....	3:30 A. M.
Wood's Museum.....	3:00 A. M.	Bryan block.....	3:30 "
Reed's Temple of Music.....	3:00 "	Oriental building.....	3:30 "
Matteson house.....	3:00 "	D. B. Fisk's Millinery house.....	3:30 "
Waterworks, three miles northeast of origin of fire.....	3:00 "	Wetherell Millinery house.....	3:30 "
Courthouse.....	3:30 "	State street bridge.....	3:30 "
Chamber of Commerce.....	3:30 "	Lill's brewery.....	3:30 "
Tremont house.....	3:30 "	Galena elevator.....	3:30 "
Evening Journal office.....	3:30 "	North Presbyterian church.....	3:30 "
American Express and Western Union Telegraph offices.....	3:30 "	Sherman house.....	4:00 "
		Hooley's Opera house.....	4:00 "
		Briggs house.....	4:00 "

Metropolitan block.....	4:00 A. M.	Field, Leiter & Co.'s store.....	5:30 A. M.
Farwell hall.....	4:00 "	Historical Society's building and books.....	6:00 "
Pacific hotel.....	4:00 "	Bigelow hotel.....	6:30 "
Belding block.....	4:00 "	Morse, Loomis & Co.'s building.....	6:30 "
McCarthy's block.....	4:00 "	Lombard block.....	7:00 "
McCormick block.....	4:00 "	McVicker's theatre.....	7:00 "
Clark street bridge.....	4:00 "	St. James hotel.....	7:00 "
Rock Island depot.....	4:00 "	Turner hall.....	8:00 "
State Savings Institution.....	4:30 "	Great Union depot.....	8:00 "
Otis block.....	4:30 "	Book Sellers Row.....	8:00 "
Doty's Billiard hall.....	4:30 "	Tribune building.....	8:30 "
Rush street bridge.....	4:30 "	Drake block (Drake & Farwell).....	9:00 "
McCormick's Reaperworks.....	4:30 "	Orient house.....	9:00 "
Garrett block.....	5:00 "	Palmer house.....	9:00 "
Crosby's Opera house.....	5:00 "	Academy of Design.....	9:30 "
First National Bank.....	5:00 "	Robert Collyer's church.....	10:00 "
Honore blocks (2).....	5:00 "	Terrace Row.....	11:50 "
Rush Medical college.....	5:00 "	Dr. Foster's house, 4½ miles from origin.....	5:00 "
Giles Bros. jewelry store.....	5:30 "		

The principal business blocks destroyed, not named in the foregoing list, were the Arcade, on Clark and Madison, \$75,000; Keep's block, close by, on Clark street, \$65,000; Pope's two blocks on Madison, near Clark, \$160,000; Raymond's, on Madison, corner of State street, \$100,000; Reynold's, on Madison and Dearborn, \$150,000; Stone's, on Madison, near La Salle, \$30,000; Berlin's, on State and Monroe, \$15,000; Palmer's, on State and Washington, \$175,000; Turner's, on State and Kinzie, \$50,000; Wright's, opposite last named block, \$30,000; Wicker's, State and South Water street, \$60,000; Boone's, on La Salle, near Washington, \$15,000; the Commercial, on La Salle and Lake, \$50,000; Link's, on opposite corner, \$60,000; Marine bank, on opposite corner, \$75,000; Magie's, southwest corner La Salle and Randolph, \$50,000; Major's, on La Salle and Madison, \$150,000; the Mercantile, on La Salle, near Washington, \$100,000; the Phoenix, on La Salle, near Randolph, \$40,000; Republic Life Insurance building, on La Salle and Arcade court, \$350,000; Steele's, on La Salle and South Water streets, \$60,000; Tyler's, near Steele's, \$55,000; the Union, on La Salle and Washington, \$120,000; Bowen's, on Randolph, near Michigan avenue, \$200,000; the Depository, on Randolph, near La Salle; McCormick's, Randolph and Dearborn, \$100,000; Scammon's, on Randolph and Michigan avenue, \$130,000; Lloyd's, Randolph and Wells, \$100,000; Burch's, on Lake, near Wabash, \$120,000; Cobb's, Lake and Michigan, \$180,000; Exchange bank, Lake and Clark, \$80,000; the Lincoln, on Lake and Franklin, \$30,000; Calhoun's, on Clark, near Madison, \$30,000; Dole's, on South Water and Clark, \$30,000; Ewing's, on Clark, near Kinzie, \$75,000; Larmon's, on Clark and Washington, \$25,000; Loomis', on Clark and South Water, \$30,000; Monroe's, on Clark and Monroe, \$60,000; Morrison's, close by, \$100,000; Morrison's, on Clark, near Washington, \$40,000; Smith & Nixons', on Clark and Washington, \$200,000; Purple's, on Clark and Ontario streets, \$100,000; Uhlich's hall, on North Clark, \$55,000; Chicago Mutual Life Insurance building, on Fifth avenue, near Washington, \$30,000; Commercial Insurance Company's building, on Washington, near La Salle, \$40,000; Fullerton's, on Washington and Dearborn, \$60,000; King's,

opposite, \$30,000; Mechanics', on Washington, near La Salle, \$50,000; Portland, southeast corner Washington and Dearborn, \$100,000; Volk's, on Washington, near Franklin, \$15,000; Merchants Insurance Company's building, Washington and La Salle, \$200,000; De Haven's, Dearborn, near Quincy, \$35,000; Dickey's, Dearborn and Lake, \$50,000; Masonie, on Dearborn, near Washington, \$50,000; Riee's, Dearborn, near Randolph, \$100,000; Shepard's, on Dearborn, near Monroe, \$80,000; Speed's, on Dearborn, near Madison, \$50,000; Walker's, on Dearborn, near Couch place, \$60,000; Kent's building, on Monroe, near La Salle, \$55,000; Newberry's, on Wells and Kinzie, \$50,000; Norton's, South Water street, near Fifth avenue, \$25,000; Newhouse's, on South Water street, near Fifth avenue, \$60,000; Pomroy's, on South Water, near La Salle, \$30,000; Sand's brewery, \$100,000, and the City National bank, \$50,000.

One of the two large Illinois Central grain elevators was saved from the fire fiend. When the flames were licking up the other a fire engine, intended for the fire department of Beloit, Wis., was seen standing on a flat car. An employe of the eastern manufacturer volunteered to assist in unloading it, and subsequently got it in readiness for work. The Chicago fire men attached the hose, and by taking suction from the lake, supplied the uninvited but welcome guest with enough water to drown the flames which had already attacked the belting inside the door. This great elevator building was saved and the engine, which was the means of saving it, was purchased by the lessees J. and E. Buckingham, the people of Beloit assenting. The municipal losses in the fire of 1871 were as follows:

City hall and furniture.....	\$470,000	Damage to street pavements.....	211,350
Machine shops and machinery (water-works)	25,500	Damage to sidewalks.....	941,380
Engine-house and machinery	" 75,000	Damage to river tunnels.....	6,000
Reservoirs.....	" 20,000	Damage to lamp posts.....	33,000
Stopping leaks.....	" 15,000	Damage to public docks.....	6,000
Repairing fire hydrants.....	" 10,000	Removing hulls from river.....	7,300
Repairing meters.....	" 6,000	Loss on records, maps, etc.....	50,000
Loss in pumping waste water	" 97,410	Loss on city offices.....	460,606
Damage to sewerage.....	42,000		
Loss on bridges and viaducts.....	204,310	Total estimated city loss.....	\$2,680,856

The county lost courthouse and all the public buildings; but the heaviest loss was that of the records, a calamity which has cost the people of city and county large annual expenditures.

One of the heaviest losers by the fire was the Catholic diocese of Chicago. Many elegant church and school buildings, valued at over \$2,000,000, went down in the conflagration. The Church of the Holy Name, northeast corner State and Superior streets, 196x75 feet, which cost \$300,000; the residence, No. 148 Cass street, which cost over \$5,000; the two school buildings cost \$24,000; St. Mary's, corner of Madison and Wabash, 110x50 feet, cost \$40,000; the church of the Immaculate Conception, North Franklin street, near Schiller, 110x50 feet, with residence cost \$25,000; and the school building \$12,000; St. Michael's church, Linden and Hurlbut streets, 200x80, cost \$200,000; St. Rose of Lima; St. Joseph's church, Cass and Chicago avenue, 130x55 feet, cost \$100,000; St. Louis church, Sherman

near Polk street, 110x40 feet, cost \$10,000, and the school buildings, \$5,000; St. Paul's church, Clinton and Mather streets, 100x40 feet, with residence cost \$20,000, and the school buildings, \$5,000; the Christian Brothers' academy, corner of Van Buren street and Fourth avenue, cost \$80,000; St. Francis Xavier's academy of the Sisters of Mercy, on Wabash, south of St. Mary's church, with House of Providence, cost \$120,000; Convent of Notre Dame, adjoining St. Michael's church; the Redemptorist convent, 190 Church street, with large parish school, cost \$32,000; the Benedictine monastery and the Benedictine convent and schools, Cass and Chicago avenue, cost \$51,000; the Alexian Brothers' hospital, 546 North Franklin street, cost \$40,000; the Orphan asylum, Superior and State streets, cost \$30,000; the House of the Good Shepherd, North Market near Division street, cost \$80,000; the House of Providence, 301 Huron street, under the Sisters of Charity, \$4,000; the Bishop's palace on Michigan avenue and Madison street, cost \$40,000.

The church buildings of Protestant congregations destroyed were: North Baptist, north-east corner of Chicago and Dearborn avenues; Olivet Baptist, colored, Fourth avenue, south of Polk, now part of Dearborn depot; Swedish Baptist, 10 and 12 Oak street; North Star Baptist, corner of Division and Sedgwick streets; Mariners' Bethel, Michigan street, near Market; New England Congregational, corner White and Dearborn; Lincoln Park Congregational, corner Center avenue and Church street; Church of Our Savior, English Episcopal, corner Lincoln and Belmont avenues; Church of the Ascension, English Episcopal, corner La Salle and Elm streets; St. Ansgarius, Swedish Episcopal, corner of Indiana and North Franklin; St. James, English Episcopal, corner Cass and Huron streets; Trinity, English Episcopal, Jackson, between Wabash and Michigan avenues; Trinity mission, English Episcopal; Second Evangelical church; Cooper's Independent church; Free Evangelical; English Lutheran church, Ontario street; First German Evangelical Lutheran; St. Paul's German Evangelical Lutheran Trinity; First German United Evangelical Lutheran; Paul's Illinois Street Independent mission; Jewish church of the north side; Kehilath Benai, Wabash avenue and Peck court; Bnag-Sholon (Jewish), corner Harrison and Fourth avenue; Sinai congregation, corner Van Buren and Third avenue; First Methodist, 668 North La Salle street; Wabash Avenue Methodist (scorched), corner of Harrison street; Grace Methodist, northeast corner of Chicago avenue and La Salle street; Grant Place Methodist, corner of Larrabee street; Dixon Street Methodist, near North avenue; Van Buren Street German Methodist, near Clark street; Clybourne Avenue German Methodist, 51 Clybourne avenue; First Scandinavian Methodist, 33 Illinois street; Grace Scandinavian Methodist; Huron Street Bethel; Bethel African Methodist and Quinn's African Methodist. Among others were the first Norwegian Evangelical Lutheran, corner of Erie and Franklin streets; Swedish Evangelical Lutheran; First Presbyterian, corner of Wabash avenue between Congress and Van Buren streets; Second Presbyterian, corner of Wabash avenue and Washington street; Fourth Presbyterian, corner of Cass and Indiana streets; Westminster Presbyterian; Fullerton Avenue Presbyterian, near North Clark street; North Presbyterian; Orchard Street Presbyterian; Presbyterian mission; Erie Street Presbyterian; Burr Presbyterian; Tammany

Hall mission; Bremer Street Independent mission; Newsboys' Independent mission and home; Swedenborgian Temple of the New Jerusalem, Adams street between Wabash and Michigan avenues; North Swedenborgian mission, junction of La Salle and North Clark streets; Unitarian Church of the Messiah (R. L. Collier's), corner of Wabash avenue and Hubbard court; Unity church (Robert Collyer's), corner of North Dearborn and Whitney streets; St. Paul's Universalist, corner of Wabash avenue and Van Buren street; First Scandinavian Congregational church, corner of Indiana and Michigan streets.

The school buildings destroyed were: Dearborn, on Madison west of State street; Jones, on the corner of Harrison and Clark streets; Kinzie, on corner of Ohio and La Salle; Franklin, on corner of Division and Sedgwick; Ogden, on Chestnut street west of North State street; Newberry (scorched), on corner of Orchard and Willow streets; Pearson Street Primary, on corner Pearson and Market; Elm Street Primary, on corner of Elm and Rush; North Branch Primary; La Salle Street Primary, north of North avenue between La Salle and Clark streets; Third Avenue Primary, between Third and Fourth avenues, near Twelfth street; First Lutheran school, First United German Lutheran school, St. Paul's Second and Third school, Italian school, German and English school.

The hospitals destroyed were the Women and Children's Protestant Deaconess' hospital, United States Marine hospital, Jewish hospital, Newsboys and Bootblacks' home; Nursery and Half Orphan asylum, corner Wisconsin and Franklin streets; St. Paul's Presbyterian Orphan asylum; Charitable Eye and Ear infirmary, 16 East Pearson street; Small-pox hospital, North avenue on lake shore and the hospitals and orphanages of the Catholic diocese.

The Wabash Avenue Methodist church, erected in 1857, was the only building left standing, October 9, 1871, on the west side of the avenue, north of Harrison street. Therein the Chicago postoffice was established December 9, 1871. As if regretting its neglect to destroy this building, the fire-fiend returned in July, 1874, and burned it up.

The O'Leary cottage escaped destruction and remained for some years, until torn down to give place to the stone front building of Anton Kolar. In 1881 a marble slab was placed in this stone front with the following inscription:

The Great Fire of 1871

Originated here and extended to Lincoln Park.

Chicago Historical Society, 1881.

Mahlon D. Ogden's frame dwelling on the square, bounded by Oak street, Dearborn avenue, Clark street and Washington square, was saved through the efforts of neighbors. The little frame house of Policeman Bellinger, between Sophia street and Webster avenue, on Lincoln place, was saved by the owner. The walls of the new Nixon block on Monroe and La Salle, and those of the Lind block on Market street, withstood the fire. The former, owing to its stone and brick walls, protected joists, and the latter, owing to its isolated position. The walls of a few other buildings, such as the First National bank and the postoffice, on the northwest corner of Dearborn and Monroe, while damaged, were not rendered useless. In the case of the postoffice, they had to be taken down *in toto*, to make way for the First

National bank building in 1882. The Illinois Central elevator, hitherto noticed, was saved, owing to the presence of a fire engine and the location of the building near the water.

The *Engineering and Mining Journal* published in October, 1871, drew attention to the dangers of frame or non-fireproof buildings, while the *American Railway Times* suggested the application of the French system of fireproofing. The first named journal pointed out the fact that occasional fireproof buildings cannot protect even their own occupants, where dangerous accumulations of combustible materials are permitted in the neighborhood; that people cannot shut themselves up in their massive palaces and safely ignore the frame tenement houses in the next block. In closing a well written editorial the *Journal* says: "Chicago will rise again. She cannot surpass in her second youth the glory of her first. We look to see not greater splendor in her chief buildings, but greater solidity and security in her meanest ones." When the above was written no man conceived Chicago of the present. True, the great west division of the city was comparatively unscorched, and came into use and notice October 9, 1871. The writer in the *Journal* considered only the south and north divisions in his editorial, and, as shown, he seemed pleased with the form and arrangement of the houses, while displeased only with the material used in their construction. Even he never slept to dream of the changes in material and architecture which a few years would introduce, and could not look forward twenty years to see fireproofing methods applied to the homes of the people as well as to the large business blocks and noble public buildings.

The fire of October 8-9, 1871, destroyed 20,000 buildings. It spread over an area of 2,100 acres, deprived 100,000 people of their homes, entailed a loss of over \$190,000,000, and blasted the foundations on which thousands had built hopes for a competence in their old age. It was disastrous to thousands—it was beneficial to other thousands—and of incalculable benefit to the community as a whole. Like the Revolution, the injury to a few resulted in freedom to over 62,000,000, and wrought changes, the material worth of which can never be measured, can never be estimated.

A city went down in flames to give place to a greater city, and to introduce, as it were, a new race of workers, of builders, of architects. Among the members of the architects' circle who shared in designing this city after the fire, were W. L. B. Jenney, G. P. Randolph & Co., S. M. Randolph, J. W. Ackerman, Armstrong & Egan, Wheelock & Thomas, John M. Van Osdel & Co., Otto H. Matz, E. S. Jennison, Cochrane & Miller, W. W. Boyington, Burling, Adler & Co., Cleveland & French, Carter, Drake & Wight, G. H. Edbrooke, Dixon & Hamilton, De Forest & Fisher, A. J. Kinney, R. Rose, S. V. Shipman & Co., Smith & Boynton, Cyrus Thomas, Austin & Llandon, Barton & Treadwell, G. Zucker, York & Ross, Tilley & Longhurst, Treat & Foltz, Henry L. Moore, Henry L. Gay, George O. Garnsey, W. A. Furber, J. Clifford, Robert Schmid, T. V. Wadskier, William Arend, J. R. Willett, Payne & Gray, L. G. Laureau, Merriam & Street, Falkner, Floyd & Clark, William W. Erand, Chaplin & Sage, Bolton & Siegel, S. F. Steward, S. P. Russell, John Tully, C. A. Alexander, F. & E. Bauman, Bauer & Loebnitz, Fred. W. Wolf, L. C. Welch, James Berrian, J. K. Winchell, George H. Johnson, W. H. Phelps, J. R. Neff, O. G. Smith, Richard C. Blum,

Victor Roy, Stillburg & Dennis, Tully & Osborne, J. H. Bigelow, Cass Chapmau, C. O. Hanson, Horsey & Sheard, Theo. Karls, H. S. Jaffray, Cudell & Blumenthal, B. & W. C. Corlies, Johu Wierbienise, J. S. Johnson, Hodson & Brown, C. H. Gottig, W. G. Clive, G. W. Osborne, L. D. Cleaveland, A. L. Robb, H. Van Lagen, Copeland & Weary, Geast, Johnson & Co., Dillenburg, C. W. Laing, H. Meissner, Myer Goldsmith, G. M. Howks, William Thomas, Roger & Lyon, C. M. Palmer, O. H. Placey, H. Rehwoldt, and a host of younger men acting independently or under the direction of the older architects. The old architects vied with the new in designing truly and, within a year or two, gave to the south division, north of Van Buren street, many pieces of architecture, in stone and brick, worthy of the oldest and most prosperous American community of the time.

The fire of October 8-9, 1871, while originating in the west division, damaged only a part of that poorly built portion east of Jefferson street, lying between De Koven and Adams. Before a year had passed over, eighty-eight substantial brick or stone-front buildings and 107 frame houses occupied the places of the rickety structures of the past on the west side.

On Clinton street, No. 261, Collins & Burgie's stove factory, a four-story brick, was erected at a cost of \$80,000; Lowenthal's store, on the southwest corner of Canal and Van Buren streets, \$15,000; the Townsend building, 41 to 67 Van Buren, was built at a cost of \$90,000 to a height of two stories, the material used being Milwaukee pressed brick; the three-story brick house at 400 and 402 Canal street cost \$20,000; the buildings of Soper & Brainard, on Taylor and Beach streets, cost \$137,500. The Chicago & Alton Railroad Company's offices at the viaduct, on Van Buren, cost \$50,000, and their freight house, \$30,000; the Union Star Line freight house, on Van Buren and Canal, cost \$25,000; Muller's coal office, on Van Buren and Charles streets, \$20,000; Aultman's warehouse, on Mather and Beach streets, \$15,000; buildings on the southeast corner of Canal and Polk streets, \$12,300; Burkhardt's excelsior machine shop, on the opposite corner, \$10,000; Keeley's building, 209 to 301 Canal street, \$15,000; the Frank Douglass block, on Canal near Van Buren, \$20,000; the W. A. Jones block, 273 and 275 Canal street, \$10,000; the N. W. Horse Nail Company's building, Van Buren and Clinton Streets, \$15,000; Armour's meat market, on Jackson from Canal to Clinton streets, \$60,000; O'Malley's building, on the southeast corner of Jackson and Clinton streets, \$20,000; L. H. Hunt's furniture factory, \$15,000, and Mayer & Co.'s, on Clinton near Harrison street, \$18,000. A few smaller brick houses were erected during the year and a number of large frame stores and dwellings.

From October 10 to November 24, 1871, there were 318 permanent stone and brick buildings erected in the south division, showing a frontage of $3\frac{1}{2}$ miles, or 17,715 feet. Of this total, buildings were erected on the several streets equal to the number set opposite the street names in the following list:

River street.....	7	Monroe street.....	26	Polk street.....	1	La Salle street.....	4
South Water street.....	12	Adams street.....	2	Michigan avenue....	8	Fifth avenue.....	6
Lake street.....	10	Quincy street.....	1	Wabash avenue....	17	Franklin street.....	9
Randolph street.....	6	Jackson street.....	1	State street.....	24	Market street.....	3
Washington street....	6	Van Buren street....	1	Dearborn street....	6	Miscellaneous.....	21
Madison street.....	29	Harrison street.....	2	Clark street.....	16	Total.....	318

The *Tribune* of October 25, 1871, in its notes on progress, refers to the architectural difference between the Old and the New Chicago. "A condition of enforced economy and a determination to secure massive permanency at the expense of elegant ornamentation, brought about an almost uniform plainness—main walls of the uncertain-colored brick, common to the Chicago of 1871, fronts of red or white pressed brick, or of the painted and pointed style, the trimmings of stone or iron and the cornices chiefly of brick. This excessively plain style, however, only obtains in the buildings now under way. The leading architects are perfectly swamped with plans for more elaborate structures, to be commenced early in the spring, so that the present is hardly the time to speculate on the appearance of Chicago, when rebuilt."

The first office or business house erected after the fire, in the burnt district, was that built by W. D. Kerfoot outside the curb line of No. 89 Washington street, between Clark and Dearborn, in the forenoon of October 10, 1871. By October 19, the site of the old office-building was cool enough to permit the order for the removal of the temporary house to a point behind the building line, to be carried out. This was a board shed with two twelve-pane windows and a door of the usual size.

The building permits issued from October 10 to October 26, 1871, for the erection of permanent brick and stone houses in the burnt district, form an historical list which the present as well as the future must value. The builders must be considered the pioneers of modern Chicago:

- D. Knowlton, Carroll street, lots 20, 21, 22, block 59, original town.
- James Ahern, Wells street, lot 3, block 101, school section.
- E. K. Rogers, River street, sub-lots 1 and 3 and lot 3, block 1, Ft. Dearborn addition.
- J. C. Walter, River street, lot 1, block 2, Ft. Dearborn addition.
- James Clark, Market street, No. 85.
- E. S. Fowler, Clark street, No. 77.
- J. C. Walter, Clark street, No. 79.
- Matt. Laffin, State street, Nos. 40, 42, 44, 46, 45, 47, 49.
- Matt. Laffin, Wabash avenue, Nos. 21, 23, 25, 27, 29, 31, 33, 35.
- Matt. Laffin, River street, No. 37.
- J. W. Horton, Hubbard court, adjoining 381 State street.
- Thomas Mackin, lots 15, 16, 17, block 42, school section, Dearborn street.
- Matt. Laffin, Washington street, Nos. 1, 2, 3.
- E. Inglis, Clinton street, lots 10 and 7, block 78, original town.
- R. G. Goodell, Clark street, No. 77.
- Fred Tuttle, Michigan avenue, Nos. 143 and 155.
- J. H. Rees & Whitney, Michigan avenue, lot 4, block 4, fractional section 15.
- Charles F. Berg, Lake street, lot 16, block 23, Carpenter's addition.
- C. G. Smith, South Water street, lot 20, original town.
- A. C. Wood, Franklin street, lot 1, block 31, original town.
- G. C. Prussing, State street, Nos. 337, 339, 341, block 11, fractional section 15.
- A. G. Wright, Monroe street, No. 100.
- A. E. Bishop, Washington street, sub-lots 4, 5, 6, 7 of lots 7 and 10, block 46, original town.
- Edward Hunt, Michigan avenue, lot 4, block 4, fractional section 15.
- F. Tuttle, State street, Nos. 58, 60 and 62.
- F. Tuttle, Lake street, No. 43.
- G. S. Bullock, Wabash avenue, lot 10, block 17, Smith's addition.
- R. Blanchard, Clark street, No. 132.

- W. Hansburgh, La Salle street, lots 5 and 6, block 56, original town.
 E. N. Blake, Clinton street, sub-lots 8 and 9, lots 2 and 3, block 28, original town.
 J. S. Kirk, N. Water street, Nos. 358, 360 and 362.
 S. B. Howes, Michigan avenue, lot 10, block 26, section 27.
 S. B. Howes, Twenty-second street, lot 1, block 4, section 27.
 E. S. Pike, Monroe street, lots 3 and 4, block 141, school section.
 J. B. Rice, Dearborn street, Nos. 75, 77, 81.
 Andrew Bolton, Will street, lot 1, block 99, school section.
 M. Grenebaum, N. Union street, lots 34 and 35, block 65, original town.
 A. H. Gannon, Clinton street, sub-lot 7, lot 2, block 28, original town.
 Z. Morrison, Clark street, lot 3, block 57, original town.
 C. Jevne, Halsted street, sub-lots 4 and 5, lots 19, 20 and 25, block 68, original town.
 P. Schnttler, Clinton street, lot 1, block 49, school section.
 C. H. Quinlan, Clark street, Nos. 81 and 83.
 C. H. Quinlan, Washington street, Nos. 218 and 220.
 J. F. Lemoyne, Clinton street, sub-lots 1 and 2, lots 1 and 4, block 27, original town.
 Mrs. A. Young, Wells street, lot 1, block 90, school section.
 Henry S. Chase, South Water street, No. 139.
 C. Growl, Jefferson street, lot 1, block 45, school section.
 W. Gunning, Wabash avenue, Nos. 666 and 668.
 M. Heath, Randolph street, Nos. 170 and 172.
 Bowen Bros., Michigan avenue, Nos. 124, 125 and 126.
 George H. Rapp, Van Buren street, No. 166.
 T. S. Fitch, Dearborn street, Nos. 163 and 165.
 Henry Kiss, Monroe street, Nos. 205 and 207.
 Alex. Bishop, Wabash avenue, No. 458.
 Henry Grenebaum, Lake street, lot 1, block 31, original town.
 C. G. Wicker, South Water street, Nos. 82, 84, 86 and 88.
 E. W. Morrison, Clark street, Nos. 113, 115 and 117.
 E. W. Morrison, Madison street, Nos. 131, 133, 151 and 153.
 R. Lancaster, Van Buren street, lots 2 and 5, block 138, school section.
 Henry Grenebaum, Fifth avenue, Nos. 76, 78, 80 and 82.
 W. Norton, Washington street, No. 31.
 J. B. Bodell, Calumet avenue, block 64, section 27.
 R. S. Feldkamp, Clark street, Nos. 392 and 394.
 W. H. Carter, Van Buren street, sub-lots 5 and 6, lot 1, block 10, fractional section 15.
 W. Wisendorf, Michigan street, No. 111.
 Anton Arado, Illinois street, Nos. 68, 72, 74 and 76.
 B. F. Walker, Madison street, lot 3, block 81, school section addition.
 J. Marsh, trustee Sherman estate, Randolph and Clark, lots 7 and 8, block 34, original town.
 A. C. Lewis, Fifth avenue, Nos. 111 and 115.
 E. M. Phelps, Wabash avenue, Nos. 48 and 50.
 J. H. Dnnham, State and South Water streets, Nos. 81 and 83.
 J. K. Botsford, Lake and Dearborn, Nos. 92 and 94.
 Barker, Pike & Brown, 100 feet on Van Buren and 100 feet on Franklin.
 H. O. Stone, State street, lot 2, block 16, assessor's addition.
 L. J. McCormick, South Water street, Nos. 61, 63 and 65.
 J. Jones, Michigan avenue, Nos. 243 and 245.
 S. J. McCormick, Lake and Wabash, No. 150.
 J. H. Reid, Lake street, Nos. 30 and 32.
 J. C. McCormick, Dearborn street, No. 180.
 J. C. McCormick, Lake street, Nos. 19 and 21.
 J. C. McCormick, Clark and Washington.
 C. McCormick, Lake street, Nos. 4, 6 and 8.
 F. A. Jensch, Wells street, Nos. 121 to 124.
 Field & Leiter, Market street, sub-lots 3 and 4, lot 2, block 53, original town.

- G. L. Zella, Clark street, No. 215.
 L. Wunderle, Wells street, No. 126.
 G. F. Bissell, La Salle street, No. 49.
 M. Keeley, Canal street, Nos. 299 and 301.
 C. Esenderf, Wells street, No. 60.
 George Smith, Market street, north half of lots 5 and 6, block 31, original town.
 L. G. Stockton, Market street, lots 11 and 12, block 84, school section.
 C. B. Brown, Kingsbury street.
 Thomas Lonigan, Clark street, Nos. 14 and 16.
 W. E. Richardson, Monroe street, Nos. 151 and 153.
 D. Rosseter, Randolph street, lots 1, 2, 7 and 8, block 37, original town.
 S. Sawyer, Washington street, north half of lot 1, block 30, original town.
 J. E. Otis, State street, Nos. 132 and 134.
 D. Buttner, Clark street, No. 198.
 John Pettie, Michigan street, Nos. 60 and 62.
 Charles Hallenberg, Michigan street, No. 64.
 W. J. Morton, Franklin street, sub-lots 6 and 7, lot 1, block 53, original town.
 J. W. Stotz, Illinois street, lots 20 and 21, block 5, B. W. & W. addition.
 F. A. Waldin, River street, lot 22, block 4, Ft. Dearborn addition.
 Mrs. A. George, W. Indiana street, lots 27 and 28, block 17, section 7.
 John Stenson, State street, No. 164.
 Peter White, N. State street, lot 7, block 5, H. O. Stone's addition.

The Henry Fuller building, 9 to 13 River street, was commenced in October, 1871, before the bricks of the old building were cold, and was the first permanent constructive work of the new city. It was a three-story brick business block, erected at a cost of \$18,000. The J. B. Drake block, on Wabash avenue and Washington street, on the site of the old one, five-story, 120x80, cost \$150,000; C. H. McCormick's, 40x180, five stories, on Michigan avenue south of Madison street, where the Burch block stood; C. H. McCormick's, northwest corner of Lake street and Michigan avenue, 64½x120, five stories, cost \$100,000; also his two stores, 30x180, five stories, at 19 and 21 Lake street, cost \$60,000; also his building on southeast corner of Randolph and (Nos. 55 to 73) Dearborn streets, 80x102, five stories, cost \$150,000, and a similar building, Reaper block, Clark and Washington streets, 100x80 feet, Mansard roof, \$200,000. The Couch heirs authorized the construction of a five-story building, 71 and 73 Lake street, to cost \$50,000; a five-story house, 80x100 feet, on South Water and (2 to 14) La Salle streets, cost \$50,000, and one 80x150 at 153 to 159 South Water between Clark and La Salle streets, cost \$50,000. The Tremont, 160 feet front (Nos. 23 to 39) on Dearborn street and 180 (Nos. 79 to 93) on Lake street, five stories, on the site of the old hotel, was also commenced; Hall & Ayres' block, on Lake street and Michigan avenue, was ordered to be built on the plan of the old house; G. E. Walker issued similar orders in relation to the Oriental four-story house, Nos. 120 to 124 La Salle street, cost \$120,000; the Insurance Exchange, four-story, between La Salle and Clark streets, on the Arcade, was rebuilt by the Republic Life Insurance Company without the mansard roof at a cost of \$173,000. On the northeast corner of State and Lake streets the Fred Tuttle building was commenced. The building of the Palmer house (163 to 185) State and Monroe streets, 254x248 feet, was resumed at once, as the plans were saved by J. M. Van Osdel; the estimated cost was \$2,500,000. Architect Wadskier designed the Philo R. King building at 155 to

159 Clark street, to be built four stories, with Kankakee stone front, for \$35,000; Dr. L. S. Major rebuilt the Major block on the plan of the old house at a cost of \$150,000; Buena Vista stone was used for the front on 137 to 151 La Salle street. The Andrews block, four stories, adjoining the Major block, 151 and 153 La Salle street, was commenced soon after by Martin Andrews to cost \$45,000, followed by the three-story Cleaver building on Wabash avenue south of Van Buren street, the Bowen marble block on Michigan avenue and Madison street, the J. H. Reed building on the northeast corner of Wabash avenue and Lake street, the Chamber of Commerce on Washington and La Salle streets, and the great hotels.

The site of Bryan hall or Hooley's theatre was purchased after the fire of 1871 by John A. Hamlin, and he erected thereon the Grand Opera house. This building was then looked upon as one of the masterpieces of Chicago architecture.

The second building, erected for the Board of Trade, was begun immediately after the fire and completed October 9, 1872. It now forms the lower floors of the great modern office building known as the Chamber of Commerce. It bore the same relation to the Chicago of 1872-80 that the former building did to the Chicago of 1865-71, and a far higher relation than its thirteen-story successor does to the Chicago of to-day.

Prior to October 24 the temporary frame business buildings on the lake shore (extending one mile along the Lake Front park) were verging on completion, and on the 23d J. W. Doane & Co. opened their store in one of them. The erection of wooden buildings throughout the west division was carried on indefatigably against the protest of ordinance observers. On October 20, 1871, the owners of property on Washington street between Dearborn and Clark streets resolved to rebuild in first-class style, to use stone fronts, and build on sound architectural principles. This resolution was carried in the face of the fact that workmen who received \$1.50 per day before the fire struck that morning for \$2.50 per day.

The Michigan avenue of 1871, south of Madison street, bore to Chicago of that day a much higher plane than the beautiful boulevard of the present does to the city of the present. It had no competitor. There the greater number of those, to whom old Chicago offered the opportunity of picking up the dollars from trade, medicine, law, journalism or town lots, entrenched themselves, and some gave liberally of their new fortunes to improve the street. The fire of 1871 swept away the entrenchments; but before the smoke ceased curling from the ruins, the rebuilding was commenced. The Gardner house, a six-story building with Philadelphia pressed brick front and iron roof, was completed within twelve months after the fire, the Hale & Ayer, and Hall & Kimbark, five-story stone buildings, Nos. 74 to 84, cost \$150,000; the Illinois Central Railroad Company's four-story brick, No. 58, cost \$45,000; the George Armour block, a five-story pressed brick, Nos. 94 to 100, cost \$80,000; A. B. Smith's four-story brick, Nos. 46 to 56, cost \$40,000, and a similar building, Nos. 30 to 34, cost \$30,000. William M. Hoyt erected his \$70,000 five-story brick on the site of Fort Dearborn, Nos. 3, 5, 7 and 9. Howe & Kerfoot built their \$35,000 block, Nos. 31 to 35; the Matteson six-story brick building, Nos. 45 and 47, cost \$30,000; Sprague, Warner & Co.'s Milwaukee brick block, Nos. 49 to 55, cost \$50,000, the A. C. Honore, five-story brick, corner of Adams

street, cost \$60,000; a four-story brick close by, cost \$35,000, while other buildings ranged from \$5,000 to \$18,000; such as those at No. 189, which cost \$5,000; Nos. 13 and 15, and No. 208, \$18,000 each; Nos. 144 and 146, cost \$8,000.

Up to 1867 Wabash avenue, south of Madison, was a residence street. North of Madison large business houses were the rule. In 1868 the tendency of commerce to creep southward was evident, and dwelling after dwelling gave place to mercantile buildings within the period of twelve months from the date of the fire.

The leading building of all erected on this street in 1872, was the five-story stone, 151x148 feet, Nos. 85 to 107, built for Peter Page, at a cost of \$300,000. It was occupied in January, 1873, by the millinery firm of D. B. Fisk & Co. The Matteson house, a five-story cut-stone building, Nos. 236 to 242, was erected in 1872, at a cost of \$200,000; the J. B. Drake five-story stone, Nos. 96 to 104, cost \$150,000; Aiken's three-story mansard roofed theatre, 150x80, cost \$150,000; the Doane five-story building, Nos. 29 to 43, known as "the Grocer's block," constructed of pressed brick, cost \$160,000. Begun in February, 1872, it must be considered the pioneer of the massive buildings on Wabash. Burdick & Mead's five-story stone, Nos. 200 and 202, 80x172 feet, cost \$125,000; the five-story stone buildings, Nos. 79 to 85, cost \$130,000; the five-story marble building, Nos. 111 to 115, cost \$100,000; the four-story stone, Nos. 244 to 252, cost \$100,000; Peek Brothers' five-story stone, Nos. 72 and 74, cost \$100,000; the Milwaukee brick front five-story building, Nos. 56 to 62, cost \$100,000; the four-story brick, Nos. 2 to 12, \$90,000; the Ballard block, Nos. 163 and 165, a five-story iron front, cost \$100,000; the five-story stone, Nos. 196 and 198, cost \$75,000; the High five-story brick and brown stone, Nos. 80 to 82, cost \$75,000; the Raw & Rowe building, Nos. 140 to 146, a five-story stone, cost \$75,000; the Thatcher, Nos. 114 and 116, a five-story stone, cost \$70,000; the Marquette five-story stone building, Nos. 48 and 50, cost \$70,000; the Durand Brothers' building adjoining on the north, cost \$65,000; the four-story building, Nos. 280 to 288, cost \$75,000; the Averill block, four-story brick, Nos. 274 to 278, cost \$75,000; Steine's Milwaukee brick five-story building, Nos. 64 and 66, cost \$60,000; while the four-story brick of Ira P. Bowen, Nos. 258 to 264, the four-story stone of Giles Brothers, 266 to 268, the four-story stone building of O. S. Hough, Nos. 358 to 360, the five-story stone, Nos. 75 and 77, and the Ryder four-story stone, Nos. 267 and 269, cost \$60,000 each, as also the Inter Oceanic block, a five-story Milwaukee brick building, erected by J. Y. Scammon, Nos. 310 to 316. The \$50,000 buildings erected in 1871-2, are the Couch five-story stone, Nos. 68 and 70, the McGinnis four-story stone, corner of Adams street; the four-story stone, Nos. 220 to 224; the Hanford five-story pressed-brick house, Nos. 1 to 11; the Horner marble (Crestline) building, No. 235; the Walsh four-story brick, Nos. 251 and 253, and the Pieree four-story iron front, Nos. 335 and 337. Four buildings, ranging in value from \$35,000 to \$45,000 were constructed within the year—Lord & Smith's six-story iron front, No. 86; the five-story stone, Nos. 349 and 351; the Scammon four-story brick, Nos. 263 and 265; the four-story stone and iron front, Nos. 259 and 261; the four-story stone, Nos. 227 and 229, and Jaeger's five-story Marquette stone building, No. 73.

At No. 213, a four-story stone, costing \$25,000 was constructed; Willard's four-story brick, Nos. 318 and 320, cost a like amount; Judge Fuller's six-story Joliet stone building, No. 84, and the five-story stone, Nos. 254 and 256, cost each \$30,000. The three-story brick Lewis house, and a few smaller buildings were in progress at the close of 1872.

The buildings Nos. 320 to 358, Wabash avenue, were not burned. The Wright building, on the site of the Second Presbyterian church, Nos. 86 to 94, was not begun in 1872.

The State street of *ante-flammam* days, while open through the prairie south of Twenty-second, was only known as a business street north of Monroe. For a few years before the fire State street contested with Lake street for supremacy, and the battle was still carried on when the great fire came to destroy all distinctions and make way for new beginnings.

The work on the stone and iron hotel building, of Potter Palmer, on Monroe and State, begun before the fire, was resumed, and this \$2,500,000 house was among the first to be completed. The Singer Machine Co.'s building, Nos. 85 to 97, a seven-story stone house, was completed at a cost of \$500,000, to be rented to Field, Leiter & Co.; the Hale, Fisher & Emerson building, Nos. 99 to 107, cost \$155,000, and the Hale & Fisher, five-story stone building, Nos. 75 to 79, cost \$70,000 the three being designed by E. S. Jennison. Dr. Judson's five-story, iron-front building, No. 111, and Keep Bros.' four-story stone front, Nos. 51 to 57 cost, each, \$60,000. The Williams & Ferry building, Nos. 113 and 115, and the Peter Page building, Nos. 117 and 119, five-story, Berea stone fronts, cost \$100,000 each; the Sturgis block of white stone, Nos. 121 and 123, a like sum; the Gothic five-story Marquette brown stone front, Nos. 125 and 127 on State and Madison, erected for the Boyce estate, \$150,000; the Tobey five-story stone front, Nos. 239 to 241, cost \$100,000; Barkley & Wilk's building, four-story, iron and stone front, cost \$30,000; the Joel Ellis, four-story brick, Nos. 265 to 271, cost \$100,000; the Watson & King, four-story brick block, State and Van Buren streets, cost \$85,000; the G. C. Prussing, four-story brick building, Nos. 337 and 339, cost \$25,000; Edward Kimball's four-story stone front, No. 161, cost \$50,000; Hadduck's building, Nos. 1 to 11, four-story brick, \$30,000; Potter Palmer's seven-story building, No. 187, cost \$30,000; N. P. Wilder's five-story brick, Nos. 47 and 49, \$30,000; Legrand Burton's five-story brick, Nos. 43 and 45, \$25,000; Reed & Bushnell's, Nos. 137 and 139, four-story stone, \$30,000; A. Rawson's, Nos. 149 and 151, five-story stone, \$50,000; William Burke's four-story stone, No. 203, \$20,000, and P. O'Neil's block, Nos. 357 and 359, a four-story brick, cost \$35,000; Wilson's Laundry, No. 297; N. E. Peterson's, No. 147; Wilson's, No. 158; Donohue's, No. 155; Goodridge's, No. 157, Lincoln's, No. 159; H. O. Stone's No. 109, cost from \$10,000 to \$17,000, each.

The First National Banking Company, the walls of whose building, Nos. 104 and 106, were left standing October 9, 1871, completed the five-story stone house in 1872, at a cost of \$300,000; Potter Palmer's six-story stone front, Nos. 108 to 116, cost \$200,000; G. W. Snow's four-story stone front, Nos. 262 to 276, cost \$150,000; E. S. Pike's five-story stone front, Nos. 166 to 172, cost \$140,000; Springer's building, Nos. 64 to 72, four-story, cost \$80,000; Mayneer's five-story stone front, Nos. 248 to 256 cost \$80,000; Coffman & Andrews' four-story stone,

No. 308, cost \$80,000; C. H. McCormick's five-story stone, Nos. 122 and 124, cost \$60,000; John Trayner's five-story iron front, No. 182, cost \$60,000; Otis, four-story stone building, Nos. 158 to 164, cost \$50,000; Thomas Mackin's block, Nos. 138 to 144, cost \$30,000; L. C. P. Freer's building (begun in 1872), Nos. 60 and 62, cost \$60,000; George Smith's four-story stone front, Nos. 48 to 56 (begun in 1872), cost \$60,000; M. Laflin's four-story brick Nos. 40 to 46, cost \$40,000; the Waller three-story stone building, Nos. 330 to 334, cost \$50,000; the Madison four-story stone, Nos. 74 to 78, cost \$30,000; J. C. Partridge's five-story stone block, Nos. 118 and 120, cost \$40,000; E. S. Pike's four-story stone, Nos. 174 and 176, cost \$30,000; Potter Palmer's five-story brown stone, No. 180, cost \$28,000; Swartz's four-story stone, No. 136, cost \$25,000; James E. Otis' four-story brick, Nos. 278 and 280, cost \$25,000; A. J. Alexander's three-story stone, Nos. 286 to 290, cost \$30,000; Smith Bros.' four-story stone, Nos. 292 and 294, cost \$35,000; the Maudel Bros.' building, northwest corner State and Harrison, cost \$30,000; the four-story stone building, Nos. 296 to 304, cost \$50,000; the De Koven, four-story brick, Nos. 16 to 22, cost \$37,000; the W. H. Winston, four-story brick, Nos. 12 and 14, cost \$25,000; the J. H. Dunham three-story brick block, Nos. 2 to 10, cost \$17,000; Mrs. Cavanagh's four-story stone building, No. 148, cost \$16,000; the two three-story and two four-story brick buildings, Nos. 150 to 156, cost from \$8,000 to \$12,000 each; the L. C. Maynard, four-story brick, No. 306, \$15,000; the Parmlee, four-story brick, No. 310, and the Hubbard four-story brick, No. 312, \$16,000 each; the Almini two-story stone, No. 344, cost \$10,500, and the Peiser two-story brick, No. 346, cost \$8,000. A few wooden buildings were erected in opposition to the ordinance.

Dearborn was from the beginning destined to be a short street, and a popular one. Near the east line of the original town, it, in time, became the center of the business section in its whole length from the river to Jackson street, and was especially adapted for the location of bank, law, real-estate and newspaper offices. In 1869 the street was opened from Mouroe to Jackson, to give frontage to the Bigelow house, as well as to the Honore block and the Sheppard block. The historic Tremont house was near its head, and the beautiful Honore block near its foot. The old McArdle house, the "old Salamander drug house," the Portland block, the Tribune, the Journal and the Times buildings, the Real Estate Exchange and other very fair architectural attempts graced the street. The fire fiend even dreamt of sparing it on that terrible morning of October 9, 1871, but the flames returned to lick up the buildings. Before midnight Dearborn street was a ruin.

The McCormick block, southeast corner of Dearborn and Randolph, was among the first to rise complete. This five-story stone building, 80x102 feet, cost \$150,000; the King & Fullerton four-story Athens stone building, Nos. 88 to 98, cost \$160,000; the Portland block, a five-story brick, with stone facings, cost the owner, P. C. Brooks, \$300,000; the Speed building, Nos. 121 to 127, a four-story stone, cost \$100,000; Kuhn's European hotel, Nos. 145 to 149, a five-story brick, cost \$125,000; the Tribuue five-story brown stone front, \$100,000; the Kendall block, Nos. 100 to 110, a four-story stone, \$100,000; the Journal four-story Cincinnati stone, resting on iron columns, \$80,000; the Fitch, northeast corner of Monroe and Dearborn,

\$80,000; the Peabody, Nos. 151 and 153, \$60,000; the Manierre, No. 131, \$75,000; the McCarthy, No. 97, \$85,000; the Williams, Rice and Bryant blocks, costing about \$80,000 each; the Honore, southwest corner of Monroe, \$400,000; the Honore, northwest corner Adams, \$250,000; walls of post-office intact; the Fuller, \$80,000; the Hawley, \$100,000; the Dickey, \$100,000; the Dickey & Manierre, the Rawson, the Bentley, the Cobb, the Smith, all \$50,000, were erected, and the Tremont house.

The Clark street of 1871 was to the city of 1871 what State street is to the city of the present day. It was a street of miscellaneous buildings, peoples and trades; the extremes of good and bad jostled against each other in the day-time, and the extremes of bad at night. Hovels stood in the shadow of the great brick block, the saloon adjoined a dry-goods or jewelry store, and the language of the tragedy or comedy or the music of the song and dance were mixed up in echo with the words of the preacher or the voices of the choir in an adjoining meetinghouse. It was Montana's Last Chance Gulch of 1866 moved to the shore of Lake Michigan in 1871.

The great fire checked up suddenly the progress of legitimate as well as of illegitimate trade, and converted the great and small shelters into a double line of ruins. Welcome fire! It destroyed little that was creditable to civilization or art on this street, for there was but little to destroy, while it rooted out all that was discreditable, and made a way for progress.

The six-story 80x140 feet, Buena Vista stone building, the Ashland block, was built for Gen. S. B. Buckner, within two months, at a cost of \$175,000 (torn down in May, 1891); the Superior block, built for Fowler, Goodell & Walter, at Nos. 75 to 79, a six-story stone front, cost \$135,000; the Methodist church block, a five-story stone front, 80x130, cost \$100,000; Morrison's Buena Vista stone front, 100x100 feet, at Nos. 119 to 129, cost \$90,000; his second, Nos. 131 and 133, Buena Vista stone front, four-story building, cost \$80,000; the Morrison block, Nos. 141 to 149, or the Boston square dealing clothing house, cost \$100,000; the Kentucky block (now Quincy building), a five-story stone front, 90x190, cost \$200,000. It was built for Knight & McNeil. A five-story stone building, Nos. 311 to 315, cost \$75,000, and a similar building, No. 323, were begun for Malcom McNeil, of Kentucky.

The Todd five-story Athens stone front at 255 and 257 was projected, the estimate being \$65,000; also the Frazier block, No. 301, to be the same as the Todd building; Thomas Hoyne's stone building, Nos. 179 and 181, was completed for \$50,000; that of Hamlin Bros., Nos. 87 and 89, in cut stone, for \$50,000; that of the Quinlan Bros., Nos. 81 and 83, for \$60,000; that of J. C. Bigelow, Nos. 191 and 193, a four-story sandstone building for \$40,000; the Kingsbury, Nos. 49 and 51, a four-story stone, for \$50,000; the Adsit, a similar building at Nos. 37 to 43, \$60,000; the Scammon, five-story stone front, Nos. 29 to 35, for \$125,000; the O'Callaghan building, No. 9, a four-story marble front, \$17,000; a marble front for Sydney Myers, Nos. 11 and 13, for \$35,000; the Peck building, Nos. 15 and 17, four-story marble front, \$40,000; the Union Trust Co's. block, front of Buena Vista stone, No. 135, for \$30,000; E. W. Morrison's \$30,000 block, Nos. 151 and 153; the Jennings four-story block, Nos. 175 and 177, for \$35,000; a \$35,000 sandstone building, Nos. 187 and 189; the \$20,000

Ruble stone building No. 183; the \$20,000 Larmon stone building, No. 185; the \$20,000 three-story brick building of James Matthews, Nos. 259 and 261; the Harrison three-story brick, Nos. 341 to 349 for \$50,000; the Weir block, No. 91, a five-story stone house cost \$20,000; Mrs. Cunningham's four-story stone-front building, No. 161, \$15,000; the Manierre brick block, No. 47, \$15,000; the Wheeler block, Nos. 1 to 5, brick, \$25,000; the Weil block, No. 289, \$7,000; the McMahon buildings, 291 and 293, \$12,000, and the smaller brick or stone buildings of J. N. Billings, 295; Becker & Kopsell, 297; Dr. Sherman, 299; D. Haven, 213; Miller, No. 115, were erected within the year on the east side of the street. Terra cotta and iron were also introduced into a few of the buildings on this side. Terra cotta trimmings and brown stone body were used in the Hopson five-story building, No. 85, cost \$20,000; iron and stone in the Marks two-story building, Nos. 277 and 279, cost \$28,000, and iron and stone in the three-story building of Pfau, No. 319. The Glance four-story brick building, 100x100 feet, Nos. 281 to 287, cost \$64,000.

In the Lakeside seven-story building, Amherst stone was used. This house is 100x125 feet, cost \$200,000 and exemplifies the higher style of architecture as applied in 1871-2. The iron and brick form was first introduced in this street, in the Thomas Mackin building, No. 330, and limestone front, in the \$25,000 building of James Campbell, No. 152. In the other buildings the Athens or Lemont, the Kankakee or the Buena Vista stone or local brick was used. The Sherman house, designed by W. W. Boyington, constructed with Kankakee sandstone fronts on Clark and Randolph, cost \$650,000; the Hinsdale, No. 142, a four-story red brick with brown stone trimming, cost \$100,000; the McNeil five-story stone, Nos. 250 and 252, \$100,000; the Freer, four-story Kankakee front, Nos. 180 to 184, \$90,000; the Boone, five-story stone, Nos. 282 to 302, 100x103 feet, cost \$125,000; the Corwith, five-story Athens stone, Nos. 322 and 324, cost \$75,000, while a similar building for R. G. Boone, Nos. 310 to 314, cost \$65,000; the Shreve, four-story Buena Vista stone front, Nos. 20 to 28, cost \$75,000; the Loomis, four-story white stone, Nos. 2 to 6, cost \$25,000; the W. S. Carver, four-story heavy stone front, Nos. 46 and 48, \$35,000; the Ogden, four-story cut stone, Nos. 30 to 36, cost \$55,000; Tureman's four-story, No. 136, \$31,000; McNeil's four-story, Nos. 128 to 138, \$35,000; Johnson's three-story brick, Nos. 104 to 120, cost \$85,000; Spalding's five-story Buena Vista stone, Nos. 158 and 160, cost \$50,000; Lawrence's adjoining, \$50,000; Dr. Ingall's, Nos. 188 and 190, four-story stone, \$35,000; McNeil's five-story stone, Nos. 222 to 226, cost \$60,000; McNeil's five-story stone, Nos. 250 and 252, cost \$100,000; Dr. Barrett's four-story sandstone, Nos. 172 and 174, cost \$25,000; J. L. Reynolds' five-story Buena Vista stone building, No. 154, \$30,000; the Jarvis block, Nos. 122 and 124, a four-story brick, \$55,000; McNeil's five-story stone, No. 148, cost \$30,000; McNeil's four-story stone, No. 186, cost \$22,000; Dr. Haven's four-story brick, Nos. 326 and 328, cost \$20,000. The Wheeler, Stillman, Otis, P. D. Hamilton, Couch estate, and T. B. Lonergan erected buildings, ranging in cost from \$11,000 to \$18,000.

The rebuilding of La Salle street was marked by that nondescript structure, which occupied the southeast corner of La Salle and Adams streets, and was known as "the old Tank"

or "the Rookery," and was occupied until 1883, by the city offices. That house was 178 feet square, a two-story brick with the old water tank, a round brick tower forming the center. It was a representative of what the exigencies of October, 1871, suggested, and as a monument to the hurry and want of taste of that day, was worth the \$75,000 expended on its construction. The building which to-day covers this site is the representative of brighter days in the city's history. It bears the same relation to Chicago of the present as the "old Rookery" did to the rebuilt city of 1872. Private enterprise was much superior to the municipal enterprise of the time, for while the "old Rookery" was building a number of elegant business blocks were also rising from the ruins.

The Major block on the site of the old Wilson homestead, was sold to Major in 1880; the Marine Co.'s block, No. 23 to 27, erected by John Y. Scammon, cost \$150,000; Lemont stone was used in the front of this building; the Nixon block, Nos. 169 to 175, which partly escaped total destruction, was finished at a cost of \$125,000; the Grand Pacific hotel building, a six-story stone building, 186x322 feet, cost \$1,500,000; Gallop & Hitchcock's Buena Vista block, Nos. 132 to 136, a five-story stone building, cost \$200,000; the Otis block, Nos. 138 to 158, a four-story stone building, cost \$100,000; the Bryan block, Nos. 160 to 176, cost \$150,000; the Union National Banking Company's four-story stone building, Nos. 102 to 108, cost \$120,000; the Merchants Insurance four-story stone building, Nos. 92 to 100, cost \$200,000; the Miller & Fry block, Nos. 84 and 86, a four-story iron front, \$110,000; Hoyne, Baird & Bradley, Nos. 88 and 90, four-story iron front, cost \$70,000; the Metropolitan block, Nos. 48 to 62, Buena Vista sandstone fronts, \$170,000; Union Mutual Life Insurance Company's building, Nos. 129 to 133, a four-story brick, \$60,000; Hartford Insurance Company's building, No. 49, three-story brick, \$20,000; the W. L. & C. I. Peck building, Nos. 1 to 9, \$50,000; the Phoenix Insurance Company or May building, No. 127, cost \$30,000; the McGee building, Nos. 64 to 70, cost \$75,000; the Schlosser at 202 and 208, cost \$50,000.

The name Wells street, as applied to the southern extension of North Wells street; up to 1871, was abolished in August, 1871, and the name Fifth avenue bestowed upon it. On October 9, the fire abolished the street itself, sweeping away the large buildings north of Randolph and the disreputable places south of that street. The total destruction of old Wells street compensated in a large measure for the trials and sufferings of the period, for no good citizen could view the ruin of that den of shame and infamy, with any other feeling than that of satisfaction.

Even after being clarified by fire and its name being changed, men still looked with suspicion on the street, and many believing that the curses of mothers, children and wives rested so heavily on it, were slow to invest moneys in massive permanent buildings. For this reason the year succeeding the fire witnessed the erection of a number of cheap frame and brick houses, while only a few expensive buildings were constructed—the three story and basement brick of the Northwestern Distillery Company, at 407 to 411, costing \$30,000, being the most expensive of the lot, erected up to October 9, 1872. The proposed White building,

Nos. 83 and 85, was estimated to cost \$75,000, but work upon it was not begun within the year. J. P. Moore's building, No. 107, cost \$22,000; Moore & Hallet's four-story marble front, Nos. 163 and 165, cost \$25,000; Chase & Root's stone front, No. 125, \$16,000; Larson's stone front, No. 123, \$14,000; Cleave's Milwaukee brick front at No. 77, \$12,000; P. and J. Casey's brick, Nos. 41 and 43, \$12,000; the two four-story brick buildings, No. 109, \$15,000; No. 111, \$12,000; Jensch's at No. 121, \$12,000; the Vermont block, stone front, Nos. 155 to 159, erected for H. S. McLean and S. F. Brown, at a cost of \$50,000; the stone front, at No. 161, for Judge Tree, cost \$12,000; the Kerfoot stone front, No. 179 and 181, cost \$25,000; James Ahern's brick building, Nos. 349 and 351, cost \$15,000; the Worst, Blaumer, Lasser building, No. 373 to 381, cost \$40,000; J. Pettibone's at Nos. 286 to 290, cost \$30,000; a \$20,000 building at No. 280, and a number of buildings ranging in cost from \$4,000 to \$11,000.

Franklin street may be said to have taken on its present form within a year after the great fire. In 1871 it was an open street from the river to Madison, and again from Adams to Tyler streets, where it terminated. In 1872 it was opened from Madison to Adams, and the classic neighborhood, known as "Conley's patch," was brought to the view of the traveler on South Water street. The principal permanent buildings erected on this thoroughfare in 1871-2 were J. V. Farwell & Co.'s building, a five-story stone front, 95x190, cost \$150,000; the Nevada block (Nos. 106 to 110), 80x100, cost \$60,000; Mrs. Cunningham's building, No. 116 and 118, \$60,000; John King's building, Nos. 88 to 94, cost \$40,000; W. J. Martin's building, Nos. 112 and 114, cost \$30,000; Potwin's building, Nos. 128 and 130, 55x81 feet, cost \$24,000; Sutherland's building, No. 49, 20x81 feet, cost \$20,000; Woodbridge's building, Nos. 54 and 56, cost \$20,000; Gerber, Wilson & Co.'s building, one story, Nos. 228 to 234, cost \$16,000; Sontag's, No. 111, \$14,000; O'Rielly's, No. 274, \$11,000; Woods, Nos. 44 and 46, \$11,000; Cleary & Enright's, Nos. 48 and 50, \$11,000; Childs', No. 115, \$12,000; J. Peacock's, No. 113, \$10,000; White's, Nos. 21 to 41, cost \$35,000, and No. 124 cost \$15,000. A few small brick buildings were also erected during the year, and preparations made to extend the built-up frontage.

That old Market street was transformed from a hotbed of vice into a great commercial thoroughfare is partly due to the great fire. Nothing less than a thorough roasting could wipe out the leprosy of the old street. Within twelve months of the time when the shanties of old Market street were reduced to ashes, the Field five-story brick building, on the northeast corner of Madison rose, costing \$350,000; the Farwell block, Nos. 135 to 151; the Wilson & Farwell block, Nos. 73 and 75, cost \$45,000; the Garvin, Nos. 77 and 79, cost \$40,000; the King, 81 and 83, cost \$25,000; the Weber, 125 and 127, cost \$50,000; the Cleveland and Thompson, 145 and 147, cost \$60,000; the Central hotel, 72 to 78 (erected by J. A. Wilson and W. W. Farwell), cost \$166,000; the Wadsworth & Dickinson, known as "The U. S. bonded warehouse," Nos. 204 to 210, cost \$45,000; the Lind building, Nos. 22 to 26, rented to Fuller & Fuller; Wells & Co.'s five-story brick, 254 to 262 Madison, cost \$100,000. Philadelphia pressed brick with Ohio stone trimmings was used in both fronts. Reid, Murdoch &

Fischer built a \$13,000 one-story house, Nos. 57 to 71, and a few smaller brick structures were erected.

River street, beginning at the intersection of Wabash avenue and Water street, runs northeast to the south line of Rush street bridge. On each side a solid line of large brick wholesale houses existed for years before the great fire, and after the burning this street was the first to rise up in solid lines from the debris. As stated before, the Judge H. Fuller, \$18,000 three-story brick building, Nos. 9 to 13, was the first permanent structure begun in the New Chicago. The Loomis & Laflin \$90,000 four-story brick was completed in 1872 at Nos. 21 to 39; Walters, Rogers & Norton erected their \$63,000 five-story brick, Nos. 28 to 34; Joel C. Walter, a \$45,000 five-story brick, Nos. 40 to 46; Matt. Laflin a \$40,000 five-story brick, Nos. 10 to 18; Ray & Coats, a \$38,000 five-story brick, "Fort Dearborn block," Nos. 36 and 38; Nunsen & Sons, a \$35,000 five-story iron building, Nos. 45 and 47; Wm. M. Hoyt & Co., a \$30,000 five-story brick and stone building, Nos. 1 to 3, and Hempstead & Armour, a \$30,000 four-story brick, Nos. 50 and 52. The Ryan, three-story brick, Nos. 5 and 7; the Downer, four-story brick, Nos. 15 to 19, and the Brown five-story brick, Nos. 6 and 8, cost from \$5,000 to \$15,000, were erected prior to the close of 1872.

South Water street as rebuilt in 1871-2 retained, in its lines of business and architecture, the forms of the old street. The buildings were erected for use rather than ornament, plain as a bricklayer could build. The greater buildings erected in 1871-2 included the Robbins \$90,000 five-story stone, Nos. 201 to 207; the \$60,000 four-story brick, Nos. 169 to 175; William Russell's \$60,000 four-story brick, Nos. 209 to 215; R. H. McCormick's \$80,000 five-story brick, Nos. 61 to 67; the Wicker, \$60,000 four-story brick, Nos. 82 to 96; the Bauer & Lowenthal \$100,000 four-story brick, Nos. 22 to 32, and the Wadsworth four-story brick, Nos. 221 to 239, cost \$120,000.

The Michigan Central Railroad Company's \$25,000 three-story office building, No. 2, was constructed of rough hewn stone; their freight depot, Nos. 8 and 10, cost \$10,000; the Price five-story brick, No. 42, cost \$35,000; H. W. Henderson's five-story brick, Nos. 48 and 50, corner of Wabash, cost \$30,000; Clark & Layton's four-story brick, Nos. 176 to 184, cost \$35,000; C. B. Hasmer's, Nos. 186 and 188, \$20,000; Pardee's, Nos. 210 to 216, \$30,000; Dominick's three-story brick, Nos. 226 to 232, cost \$30,000; C. G. Smith's "Lumbermen's exchange," Nos. 234 to 240, cost \$37,000; W. B. Ogden's four-story brick, Nos. 242 to 248, cost \$45,000; William Hickling's four-story brick, Nos. 250 to 256, cost \$25,000, and M. Hickling's, No. 12, \$18,000; Purington & Seranton's four-story brick block, Nos. 266 to 272, cost \$25,000; Ballentyne & Lawrence's five-story brick, No. 71, cost \$25,000; Foster & Porter's three-story brick, Nos. 93 and 95, \$25,000; E. B. Williams' four-story brick, Nos. 97 to 101, \$35,000; H. McGee's four-story brick, Nos. 123 and 125, \$30,000; the Couch building, Nos. 153 to 159, \$50,000; Brown's four-story brick, Nos. 149 and 151, \$20,000 the Couch four-story brick building, Nos. 179 to 183, \$50,000; a five-story brick, Nos. 55 to 59, cost \$40,000; Harmon & Messer's four-story brick, corner South Water and River streets, cost \$30,000; P. L. Yoe's three-story brick, Nos. 89 and 91, cost \$25,000; the four-story

brick, Nos. 133 to 137, cost \$38,000; a five-story brick, No. 245, cost \$24,000; one at No. 33, cost \$20,000; one at No. 35, a like sum; one at No. 39 and one at No. 43, \$15,000 each; Fullerton's at 118 and 120, \$15,000; Beers' at No. 73, \$15,000; J. & H. Chapman's, No. 139, \$15,000; one at No. 241, \$18,000; Wright's two-story brick, Nos. 218 to 224, \$13,000; Taylor's four-story brick, Nos. 274 and 276, \$12,000, and Wheeler's, 278 and 280, a like sum; the Western Transportation Company's one-story brick and filling, \$20,000, and the Binz four-story brick, No. 111, \$17,000.

Lake street, from the Illinois Central railroad depot to the bridge, over the south branch, was, with the exception of short River street, the only well built up thoroughfare prior to the fire. It was the first to bestow the ideas of art on its buildings, and, after its destruction, October 9, 1871, was the first to adopt a uniform style of architecture for the new buildings. Within a year, one building, costing \$200,000, three costing over \$100,000 each, and ten costing \$100,000 each, with several \$50,000 to \$80,000 houses, were completed. L. J. and W. S. McCormick's five-story stone, Nos. 34 to 40, cost \$200,000; McGee & High's four-story brick, Nos. 104 to 108, cost \$160,000; Hibbard & Spencer's, known as the Reed building, a five-story brick, at Nos. 30 and 32, cost \$117,000; S. B. Cobb's five-story stone, Nos. 1 to 13; Peter Hayden's five-story iron front, Nos. 45 to 49; LeGrand Burton's five-story iron front, Nos. 59 to 63 (formerly the City hotel); Osborn & Adams' four-story stone, Nos. 199 to 205; McCormick's block, five-story marble front, Nos. 4 to 8; Kohn Brothers' five-story stone, Nos. 10 to 14; Fred Tuttle's five-story iron front, Nos. 58 to 62; Robbins' five-story iron front, Nos. 190 to 196; the Couch five-story stone, northwest corner Lake and Dearborn, and the five-story building, Nos. 152 to 156, cost each \$100,000. The Garrett Biblical Institute Company's four-story brick, Nos. 243 to 255, cost \$110,000. The Tremont house is included in the list of buildings on Dearborn street.

The Sturgis \$80,000 five-story brick, Nos. 72 to 78; the Clark, Dickey & Scammon \$80,000 four-story brick, Nos. 80 to 86; the Botsford \$75,000 four-story stone, Nos. 92 and 94, and the Right \$70,000 five-story brick, Nos. 112 to 116, were brought into existence within one year.

The Winston four-story stone, Nos. 144 and 146, the Rosenfeld & Rosenberg five-story building, Nos. 15 and 17, and the C. H. McCormick building, Nos. 19 and 21, cost each \$60,000; the Blair block, a four-story brick, Nos. 172 to 176, cost \$65,000; Doggett, Bassett & Hills' five-story brick, Nos. 29 and 31; Drummond's four-story iron front, Nos. 65 and 67; the Couch five-story stone, Nos. 71 and 73; the Botsford & Shumway four-story stone, Nos. 107 and 109; Bugal's four-story stone, Nos. 111 and 113; Porter's four-story brick, Nos. 207 and 209; Porter, Stone, Haddock, Lawyer and Butterfield's block, four-story brick, northwest corner of State; Henry Corwith's five-story iron front, Nos. 54 and 56; Mallers & Adams' four-story stone, Nos. 136 to 140; Scammon's five-story brick, Nos. 222 and 224, and William Wheeler's four-story brick, Nos. 139 to 145, cost \$50,000 each.

The Corwith five-story iron building, Nos. 51 and 53; Henry Greenebaum's four-story brick, Nos. 159 to 165; J. Cobb's four-story stone, Nos. 171 and 173; D. Young's four-story

brick Nos. 195 and 197; Ullman & Pardee's four-story brick, Nos. 239 and 241, and Talburt's four-story stone, No. 118, were completed within the year, at a cost of \$40,000 each.

Mrs. Church's four-story stone building, Nos. 131 and 133, cost \$25,000; Prescott's five-story brick, Nos. 175 and 177, \$32,000; A. White's four-story brick, Nos. 217 and 219, \$30,000; William C. Dow's five-story stone, No. 22, \$30,000; the five-story stone and iron front, No. 24, cost \$28,000; Muller & Try's five-story brick and iron block, Nos. 46 and 48, cost \$26,000.

Jennings & Oppenheimer's four-story brick, Nos. 132 and 134, cost \$24,000; McNeill's six-story stone front, No. 44, cost \$20,000; Blasey's three-story brick, No. 191, \$16,000; Holden, Surdam & Locke's four-story stone, Nos. 178 to 182, \$15,000; Stearnes & Co.'s four-story brick, No. 248, a like sum; Grant Goodrich's four-story brick, No. 246, \$13,000; Thatcher's four-story brick, No. 218, \$13,000; the three three-story brick buildings, Nos. 202, 204 and 206, \$12,000 each, and Robinson's one-story brick, No. 193, cost \$10,000.

Randolph street could boast of a few elegant new buildings within one year from the day it was fire-swept, as well as the old Lind block, on the northwest corner of Randolph and Market streets, which withstood the blaze. The Sherman house referred to in the list of Clark street buildings, was, of course, the leading structure of rebuilt Randolph street. The Briggs house, northeast corner of Randolph and Fifth avenue, a six-story stone front, was built for Reed & Moss, at a cost of \$160,000; Bowen's five-story brick, Nos. 11 to 21, cost \$150,000; J. Y. Scammon's five-story brick, named the Dearborn block, Nos. 1 to 9, cost \$110,000; the Kingsbury building, a five-story stone, Nos. 113 to 119, cost \$150,000; the Hamlin & Greer four-story stone block, Nos. 74 to 82, cost \$110,000; the Metropolitan block, on the northwest corner of Randolph and La Salle streets, a four-story Buena Vista stone building, \$170,000; The Western News Company's four-story stone block, Nos. 40 and 42, \$100,000, and A. C. Honore's four-story brick, Nos. 191 to 197, \$100,000.

The Bryan & Haines' four-story stone building, Nos. 143 to 147, occupied by the Fidelity Savings bank, cost \$70,000; Schoelkopf's four-story stone, Nos. 230 to 236, \$70,000; William Blair's five-story stone building, Nos. 179 and 181, \$75,000; Hooley's Opera house, No. 149; Bonfield's four-story stone, Nos. 199 to 203, \$60,000; Hoeken & Koefflar's four-story brick, Nos. 227 to 233, \$60,000; Heath & Milligan's five-story Milwaukee brick front, Nos. 170 and 172, was completed, in March, 1872, at a cost of \$50,000; Gardner's \$75,000 five-story white stone block, Nos. 171 to 175; Mary Shaw's \$35,000 four-story stone building, Nos. 207 and 209; Peasch's \$25,000 four-story stone, No. 221; the \$26,000 five-story stone, Home of the Friendless, No. 177; the \$30,000 four-story stone Home of the Friendless, No. 169; Rosenfield's \$30,000 five-story stone, No. 167; the Allen \$40,000 four-story brick, Nos. 34 and 36; Hinsdale's \$20,000 four-story brick, Nos. 22 to 26; Mrs. Sandford's \$18,000 four-story brick, No. 38; J. M. Bryant's four-story stone, No. 98, cost \$25,000; Swift's four-story brick, Nos. 100 and 102, cost \$30,000; Hosmer & Manning's four-story stone, Nos. 112 and 114, cost \$38,000; Strod's four-story brick, Nos. 84 and 86, cost \$20,000; Wehrle's three-story brick, No. 155, cost \$8,000, and two smaller buildings.

The effort made by the property owners on Washington street, to build in accordance with the architectural ideas of twenty years ago, gave to New Chicago one of its leading thoroughfares. The Times building, five stories, with Michigan Parma stone fronts, on Washington and Fifth avenue, cost \$150,000; "My Block," or N. P. Wilder's six-story study in marble, Nos. 14 to 20, cost about \$200,000; the Staats Zeitung building, a six-story block, cost \$100,000, and the Holmes & Hubbard four-story Berea stone block, Nos. 164 to 170, cost \$100,000. The Chamber of Commerce, on the southeast corner of Washington and La Salle, was constructed of Buena Vista stone, at a cost of \$300,000. It was a model building at that time and considered perfect in its proportions; but to-day men wonder what they saw admirable in it, in the light of the present remodeled palace.

The four-story brown stone front, Nos. 191 to 197, designed by architect W. A. Furber, cost \$95,000; King's building, a four-story house, No. 85, cost \$80,000; the McCarthy four-story stone building (fronting on 97 Dearborn), cost \$75,000; the Reed four-story iron and stone block, Nos. 156 and 158, cost \$75,000; the four-story stone, No. 159, cost \$75,000; Edward Ely's four-story Milwaukee brick and brown stone block, Nos. 6 and 8, cost \$75,000; the five-story stone front, Nos. 36 and 38, \$60,000; the Mason four-story stone, Nos. 92 and 94, cost \$50,000, and the five-story iron front, Nos. 163 and 165, cost \$50,000.

The Owens block, Nos. 222 to 226, a four-story brick; a four-story stone, Nos. 88 and 90, a three-story stone, Nos. 84 and 86, and the Shreve, Berea stone four-story block, Nos. 91 and 93, cost \$40,000 each. The Morris building, No. 12, a four-story pressed brick front, cost \$35,000. The four-story brick, Nos. 218 and 220; the Teutonic Insurance Company's brick and stone four-story building, No. 172; Joseph Smith's four-story stone, Nos. 187 and 189; the four-story brick, Nos. 183 and 185, and Dr. Davis' five-story Berea stone block, No. 25, cost \$30,000 each. A few small brick buildings were erected, such as that of Seymour & Co., No. 219, cost \$12,000; that at No. 217, \$8,000, and that at No. 204, \$7,000.

Madison street, which had just entered upon a course of much-needed improvement before the fire, was prepared by fire to assume its present dress. West of La Salle street a number of cabins lined old Madison, while east of La Salle only a few new and important buildings gave token of its destiny. The fire destroyed both the good and bad, and cleared the way for that splendid collection of buildings found there at the close of 1872. On this street, Nos. 265 to 279, the first block completed in the burnt district, was opened for the transaction of business.

The five-story, Marquette stone Tribune building was at once erected at a cost of over \$100,000; McVicker's theatre, a four-story imitation marble front, Nos. 78 to 86, rose out of the ruins at a cost of \$170,000; Scoville & Allen erected their \$125,000 five-story Columbia sandstone block at the corner of Franklin with a red pressed-brick front on Franklin; Keith Bros. invested the same amount in their Ohio sandstone, five-story block, Nos. 246 to 252; Hanlin, Hale & Co.'s five-story brick, Nos. 222 to 238, cost \$125,000; M. D. Wells & Co. used Philadelphia pressed brick in their five-story block on Madison and Market streets, Nos. 254 to 262; M. Burke built the five-story brick, Nos. 140 and 142, at a cost of about \$100,000;

R. & G. Manierre's four-story stone, Nos. 91 to 95, cost about \$85,000; the Morrison four-story stone buildings, Nos. 111 to 117, cost \$75,000; C. De Wolf's four-story stone, Nos. 105 to 109, cost \$60,000; A. B. Smith's, Nos. 99 and 101, cost \$50,000; James Wadsworth's five-story brick, Nos. 175 to 181, cost \$80,000; Gilbray, of Philadelphia, had the five-story ornamental stone front erected at a cost of \$125,000, Nos. 215 to 223; Field, Leiter & Co.'s five-story, common red brick wholesale house, Nos. 241 to 263, cost \$350,000; Mrs. Hawley's five-story iron and marble front, Nos. 98 and 100, cost \$70,000; H. O. Stone's five-story stone front, Nos. 144 and 146, cost \$60,000; Rosenfeld & Rosenberg's buildings, Nos. 112 to 116, cost \$60,000; W. C. Coolbaugh completed the first block, a three-story brick, in the burnt district, Nos. 265 to 279, at a cost of \$60,000; the National Bank of Commerce erected a four-story, Milwaukee brick building, Nos. 50 to 56, and Rosenfeld & Rosenberg a five-story stone front, Nos. 106 and 108, costing \$45,000 each; A. C. Prout's four-story, Philadelphia pressed brick, Nos. 186 and 188, cost \$40,000; the Otis block, four-story brick, Nos. 66 to 76, cost \$40,000; Anderson's four-story stone, Nos. 139 and 141, cost \$50,000; James Marks' two-story stone front, Nos. 167 and 169, cost \$20,000; James Irons and H. McGee erected the \$12,000, three-story stone, Nos. 171 and 173; W. S. Shepherd, the \$20,000, five-story brick, No. 183; the Fifth National bank, the one-story brick, Nos. 189 to 197, cost \$20,000; J. W. Pierson, the four-story stone front, Nos. 225 to 229, cost \$20,000; C. P. Jenks, the \$20,000, four-story stone front, Nos. 10 and 12; S. S. White, the \$20,000 two-story brick, Nos. 14 and 16; C. C. P. Holden, the five-story stones, Nos. 102 and 104, cost \$25,000; the five-story stone, No. 110, cost \$18,000; the Harlan block, a four-story stone, No. 166, cost \$20,000; S. Nickerson's two-story brick, Nos. 178 to 182, cost \$20,000; G. R. Smith's three-story stone front, No. 184, \$11,500; James Egan's two-story brick, No. 196, \$10,000; G. S. Knox's three-story brick, No. 198, \$10,000; George Bent's three-story brick, Nos. 200 and 202, cost \$20,000; Jameson & Morse's two-story brick printing house, No. 240, cost \$6,000; Holden, Tascott & Simpson's three-story brick, No. 242, cost \$15,000; O. Hanson's two-story brick, No. 244, cost \$3,500; Henry Corwith's four-story brick, Nos. 264 and 266, \$30,000; Samuel Myers' four-story brick, Nos. 268 and 272, \$35,000, and George R. Roberts, four-story brick, Nos. 274 and 276, \$25,000.

Monroe street was outside the business center in 1870; its little buildings were swept away in 1871, leaving the walls of the Palmer house, then being constructed, and of the Nixon building standing. Within a year a few great buildings and a number of important ones were completed, and the street began to assume its present form. The Palmer house on the southeast corner of State street, the Clifton house on the northwest corner of Wabash avenue, J. V. Farwell & Co.'s half-million dollar building, Nos. 221 to 265, with its composition stone front; the American Express Company's \$300,000 five-story Berea stone front and Mansard roof, Nos. 70 to 78; Culver, Page & Hoyne's five-story pressed brick and iron front, Nos. 118 to 120, cost \$75,000; H. Brinkworth's four-story brick, Nos. 73 and 75, cost \$90,000; J. M. Williams' five-story stone, Nos. 196 to 204, cost \$70,000; Albert Crane's cut stone four-story building, No. 116, cost \$45,000; B. P. Ward's four-story stone, No. 112,

\$30,000; Appleby's five-story stone, Nos. 180 and 182, \$25,000; John Miller's five-story stone, No. 143, \$25,000; J. P. Smith's, Jr., five-story stone front, \$30,000; J. W. Burt's five-story stone, Nos. 207 to 213, cost \$90,000; R. Lancaster's four-story marble front, No. 149, \$18,000, Judge Tree's four-story stone, No. 177, \$15,000; McLean's three-story brick, Nos. 184 and 186, \$15,000; George Boomer's four-story brick, No. 71, \$25,000; Potter Palmer's three-story brick, Nos. 49 to 55, \$10,000; a five-story brick with stone facings, Nos. 139 to 141, \$35,000, and Myers' opera house, all took the place of the ruins. The walls of the old Postoffice building withstood the fire and held the northwest corner of Monroe and Dearborn until razed to give place to the present First National bank building.

The upbuilding of Adams street did not seem to concern the builders of New Chicago for a number of years after the fire. Such buildings as the Lakeside, Quincy and Honore abutted on this street in 1872-3; but beyond the fact that J. McDonald erected a four-story brick block, 100x50 feet, or Nos. 174 to 182, at a cost of \$75,000, and Mrs. Hadley, a \$35,000 four-story stone block, Nos. 80 and 82, capital appears to have overlooked the street. The De Wolf, three-story brick, Nos. 170 and 172, was a \$15,000 venture on the part of the Justice. The Gas company made no attempt to improve their grounds.

Jackson street from State street westward was a region of little tenement houses. The fire swept them away. Even the building of the Grand Pacific hotel did not hasten the work of improvement, and not until the present Board of Trade building was begun did this thoroughfare show signs of life. In 1871-2 a four-story brick house costing \$30,000 was built at Nos. 45 and 47, and a somewhat similar house at Nos. 81 and 83 for \$20,000; William M. Dee's \$16,000 four-story brick was erected at No. 85; P. Hogan's \$7,000 house at Nos. 221 and 223, a \$34,000 building, Nos. 225 to 229, a two-story frame at No. 90, and a one-story frame, Nos. 86 and 88.

Van Buren street west of Clark street was little better than Market street in its buildings and inhabitants when the great fire swept it out of existence. The Michigan Southern railroad depot occupied the position of the present depot. Its rebuilding was the first important work carried on after the fire; Alcott's four-story brick, Nos. 45 and 47, was finished at a cost of \$35,000; E. L. Stahl erected a \$10,000 three-story brick, No. 173; M. Egan, a \$15,000 two-story brick, Nos. 227 to 233; Andrew Guemath, a four-story brick, No. 225, cost \$8,000; the Western Book Concern erected a four-story brick at a cost of \$25,000, Nos. 24 and 26; D. K. Pearson and W. H. Carter erected a similar building, Nos. 46 and 48, which cost \$35,000; R. & L. Lancaster built the three-story \$60,000 brick building, Nos. 74 to 78; the German Methodist Episcopal church society erected a little frame building, No. 98; T. H. Brown, a \$50,000 three-story brick building, Nos. 208 to 218; Michael Gillock, a five-story brick, Nos. 204 and 206, at a cost of \$25,000; C. Arnold, a \$12,000 brick, No. 200; L. Fisher, a \$7,000 brick, No. 202; J. M. Weber, a \$10,000 brick, No. 186, and a \$7,000 brick at No. 172.

The Atlantic hotel was erected in 1873 by John Keller. It is a five-story stone-and-brick building, stone front, measuring 50x125 feet. On the first floor are the office, bar, billiard room, dining room, etc., and on the upper floors are handsomely furnished parlors and

sleeping apartments. The house contains in all about 150 rooms. As a specimen of the buildings of that period and as a pioneer of the importance of Van Buren street, the old Atlantic merits attention.

Congress (formerly East Tyler) street, east of the river, extended only from Wabash to Michigan at the time of the fire. The buildings on the north side were reduced to ruins, and a few of those which occupied the south side; but within twelve months Aiken's theatre, at the corner of Wabash, was completed with others, such as the \$25,000 three-story brick, No. 19; William H. Taylor's \$12,000 two-story brick, corner of Wabash, Nos. 25 and 27; Kale & Cohn's \$8,000 two-story brick, Nos. 47 and 49; J. K. C. Forest's \$25,000 four-story brick, No. 20; J. Willard's \$70,000 four-story brick, fronting on Wabash, Nos. 22 to 30; Oscar Field's \$10,000 two-story brick, Nos. 42 and 44; Mrs. Tierney's \$2,000 one-story frame building, Nos. 51 to 59, fronting on State street; Pennoyer, Shaw & Co.'s \$3,500 one-story frame, Nos. 29 to 45; William Wheeler's \$2,000 one-story frame, Nos. 46 to 60, with front on State street, and J. Beers' \$8,000 one-story frame building, No. 18. The fire of 1874 destroyed some property on this street, and ten or eleven years later the large Donohue & Henneberry building, northwest corner of Wabash, was literally burned up. No other street in the world has benefited so largely from fire as this short street. The south front of the Auditorium, the south front of the Leiter building and that of the Kimball building, form an index to the future of this street, which is to be widened, and the south line improved with great buildings.

Harrison street of 1871 was as irregular in its lines as it was in its buildings and inhabitants. It required the refining power of fire to make it straight, and the fire-king selected its lines for the commencement of his devastating march northward. East of No. 47 to the lake escaped destruction that night of October 8-9, but the south line was more fortunate, as the fire did not spread east of No. 136. The upbuilding was slow, compared with northern streets, and, in fact, nothing of a permanent character was erected thereon until 1873, if the \$2,000 two-story frame, No. 165, the \$3,000 three-story frame, No. 166, and the \$2,000 two-story frame, No. 168, be excepted.

The rebuilding of the north side was resumed simultaneously, and before the close of August, 1872, Armour & Munger's elevator, on North Water street, between Franklin and Market, relieved the dreariness of the ruins. This building 275x75 feet resting on a stone base, was sided and roofed with slate. The Galena elevator, a wooden building, 300x80 feet, was completed soon after, followed by the four-story Milwaukee brick house of the Chicago Marble Company, and the two brick freight sheds of the Northwestern Railroad Company.

East Kinzie street the north line of the original town of Chicago, was, for years before the fire, a business street of no mean pretensions. On October 9 and 10, 1871, it was reduced to ruin. The enterprise of Leander J. McCormick led the way in rescuing it from inutility. A three-story \$45,000 brick was erected at Nos. 185 to 191; a three-story \$8,000 brick at No. 155, and a similar building at No. 149; while a \$30,000 three-story brick was built at Nos. 197 and 199. Tillinghast & Co.'s four-story Philadelphia pressed brick corner of La Salle street; F. Sawyer's two-story block, Nos. 205 to 215, the three-story brick block adjoining;

North
side

the four-story brick on the opposite side of the street, and the Western Electric Manufacturing Company's three-story brick, 240x60 feet, adjoining relieved the Dearborn avenue neighborhood. At least fifty other brick buildings were completed by October, 1872, and a beginning made on more than fifty other permanent buildings.

Michigan street could boast of over fifty brick buildings at the close of 1872, exclusive of the corner buildings on the streets intersecting it. The principal buildings were the Charles E. Willet's soap factory, No. 53, a three-story brick; Peter Smith's wagon shop; P. Mooney's horse-shoeing establishment, No. 103; H. N. Haff's five-story 100x100 feet building, called the Hemlock block; E. Ammon's three-story brick, No. 139; Sherman, Hall & Cook's three-story brick; the Phoenix works, Nos. 228 and 230; a three-story brick on the opposite side of the street; the Raymond and the Rogers brick warehouse buildings, Nos. 235 to 243; J. Jonas' hide and skin shop, Nos. 245 to 249; a two-story brick, Nos. 260 and 262; and the Peshtigo company's three-story block at the east end.

Illinois street showed the effects of the great fire for some years. Omitting the buildings on the corners of intersecting streets, there were only a few improvements made in 1872. Alderman Devine led the advance guard of improvers by erecting a block of three residence buildings, each three stories in height and basement, Nos. 207, 209 and 211. J. W. Newell & Sons, locksmiths erected the three-story brick, No. 205; J. M. Goodrich the four-story brick, No. 245; a four-story brick, near the corner of Market street was built far back from the building line; opposite was erected a two-story brick dwelling, and at No. 120, another two-story brick house. O. M. Harris built a three-story brick warehouse, about number 246; a three-story brick was erected on the corner of Rush street; two brick dwellings on the corner of Pine street, and two permanent structures east of Pine street.

Indiana street boasted of twenty brick houses in October, 1872, including a two-story brick dwelling east of Rush street, a three-story double brick Nos. 275 and 277 and three brick buildings west of State street, with fifteen brick cottages or business buildings, scattered here and there, such as the Harry Fox block of five dwellings near Pine street.

Ohio street, a favorite residence locality before the fire, was revived immediately after. The Kinzie school building, a three-story brick resting on a high rock basement, the George Webster Milwaukee brick block of five dwellings, east of Rush street, on the north line; George M. Stanton's three-story brick also east of Rush street, Mrs. Adam's two-story brick close by, the two-story pressed brick, No. 211; the three-story brick No. 181, the three-story brick near Wells street, the restored German Lutheran meetinghouse; Stafford's three-story marble front, double dwelling house, and the washed-out building constructed of old brick, all marked the renewal of the life of old Ohio street.

Ontario street showed nine brick buildings in October, 1872, including the block of three three-story brick dwellings erected by Griffin, near Clark street; Dr. Gear's three-story dwelling adjoining and Smear's two-story barn near Rush street.

Erie street boasted of a double two-story brick building, just east of Clark street.

Huron street exhibited signs of life in the preparations made for the building of the New England church, corner of Dearborn.

Superior street made the beginnings of its present condition in 1872. Frank Agnew erected a two-story marble-front dwelling near Rush street; a two-story brick, with stone facings, was built west of Agnew's house; two brick dwellings were erected east of Pine street; a block of four dwellings, two-story brick, with mansard roof and high basement, was erected at Nos. 377 to 383, adjoining a new frame dwelling house, while on the corner of Rush street the work of building the Fourth Presbyterian meetinghouse was begun.

Chicago avenue improvements in 1872 compared favorably with those of any of the east and west streets in the north division. Twenty-two brick buildings were erected, exclusive of Samuel Johnson's business block. Opposite the water-works, a new marble front and a one-story brick dwelling were erected; east of Cass street, a double two-story brick dwelling; near by, a block of four two-story brick dwellings; at the corner of Cass, E. C. Epp's two-story French roofed dwelling; two three-story brick dwellings, Nos. 317 and 319; two two-story brick dwellings, Nos. 327 and 329; Schoellkoff's two-story brick dwelling, No. 298; a one-story brick, No. 123; a two-story brick, No. 148; three two-story brick dwellings, Nos. 108, 110 and 112; two two-story brick, Nos. 91 to 95; three two-story brick, Nos. 35, 39 and 52; a brick building, No. 85; the Herting brick block, corner of Wesson street and the Pearson school, a Milwaukee brick structure.

From Chicago avenue to Cedar street (a short street running from Rush to the lake) no brick or stone improvements were made in 1872. The three-story dwelling for Michael Brand, at 30 Cedar street, and Bush & Brand's brewery buildings were built on Cedar street, Schmidt & Glade's brewery buildings on Grant place, the Bartholomae & Leicht brewery on Sophia street, and the large brick building of the Sisters of Mercy, known as St. Joseph's hospital, also on this street, led the van of improvement.

Division street boasted of the Franklin schoolhouse, the three-story Philadelphia pressed brick block, Nos. 313 and 315, and the two-story brick on corner of Clybourne avenue. On Linden street, the walls of the large building, St. Michael's church, withstood the fire, and were used in the restoration of the church. On Clybourne avenue fifteen brick houses were erected up to October, 1872.

By December, 1871, St. Paul's German Evangelical Lutheran society had a school and church completed at 333 Larrabee street, and on October 9, 1872, their new brick house, a duplicate of that destroyed, rose, complete, out of the ruins.

Pine street of old was one of those beautiful streets which won for Chicago the title "Garden City," and warranted the motto for the municipal seal—*urbs in horto*. Large residences stood in large grounds, in many instances an entire block being devoted to garden and lawn. The fire, in removing what was vile and crowded and grotesque, wiped out the homes on Pine street. The first improvement was the five-story brick pile of James S. Kirk & Co. Two days after the fire they began rebuilding. A stream of water was turned on the hot brick in the ruins of the old factory, to cool them, a large number of laborers and bricklayers were present ready for work, and by December 19, 1871, the firm recommenced the manufacture of soap in a building raised upon ruins and built of ruins. The Harry Fox brick

block of five dwellings, three-story, was built on "the sands," east of Pine. The Webster & Baxter brick block of five three-story dwellings was erected at the corner of Ohio street; B. F. Adams' three-story marble front occupied a corner of Ontario street; I. N. Arnold's three-story marble block of three dwellings was built near Ontario, while a dozen of less pretentious brick buildings pointed out the fact that new Pine street was destined to excel the old.

Rush street was another ornament of the Garden City, but, like Pine, was reduced to ruins. Immediately after the fire, an attempt was made to erect a fireproof building, on the site of the former Empire warehouse, at the corner of Kinzie. This building, a three-story one, 166 feet on Kinzie, 72 on Rush and 172 on the river front, was erected for T. B. Brown and Moore. The first attempt at improving residence property was the quarter-million-dollar one of George M. Stanton and Frank Sturgis, which resulted in placing a four-story marble block of ten dwellings between Ohio and Indiana streets. The Milwaukee brick dwelling of H. J. King was erected at the corner of Huron street, while opposite, Julian Rumsey's three-story double dwelling was built. A large building for warehouse purposes was erected near the bridge, and a large number of frame dwellings were put up before the fire ordinance was approved.

Cass street did not begin to assume its modern dress until the summer of 1872. Prior to July, a few ordinary brick dwelling houses were erected. William Gordon, of Savannah, Ga., may be credited with beginning the true improvement of the street, for by the close of 1872 his block of five brick three-story dwellings, at the corner of Illinois street, was complete; the Slader two-story brick dwelling, on the corner of Indiana street, was completed early in the fall of 1872; J. L. Stark's marble-front two-story residence, north of Indiana; Frank Agnew's two marble front dwellings, on the corner of Superior street, and the odd Swiss looking chalet of Mrs. Reed, at the corner of Ohio, were also completed in 1872, and all played an important part in suggesting the style of buildings subsequently adopted by the builders of Cass street.

North State street improvements commenced at the wrong end, and marched southward by degrees. Thomas Mackin, Alderman Devine and a few other builders, however, went cautiously at work to improve the street south of Superior street, so that by the close of 1872 it was not wanting in material evidence of progress. In the far north, Elliott Anthony, now a judge of the Superior court of Cook county, built a two-story brick block, corner of State and Pierson streets; the Smith dwelling, a three-story brick, was erected on the corner of Chicago avenue; a second three-story brick was built on the southeast corner of Division; the five four-story brick dwellings, with brown-stone facings, raised above the ruins on the northwest corner of Division, while nine other brick buildings were scattered through the forty-five frame buildings erected in 1871-72. Charles Pope's four-story brick malt-house, near Banks street, and the Doyle brewery, near Division, were built immediately after the fire.

North Dearborn street, of olden days, was a favorite residence street, even as its southern extension was a popular office street. It was the boulevard of the north division, with well-kept lawns or flower gardens stretching from the building line on each side back to the detached dwellings.

Early in 1872 the two-story double brick building, Nos. 101 and 102, was completed; the three-story brick block of dwelling houses, 210 and 212, was also ready for occupancy in the summer; the Marble dwelling, a three-story brick, with stone facings, on the corner of Chestnut street; Taylor's block of five residences, each a three-story brick, with stone facings; B. B. Page's Milwaukee brick dwelling, at the corner of Maple street; the four-story brick block, 451 to 455, north of Division street, Eli Bates' two-story brick dwelling; a brick residence, with mansard roof, farther north, and a double brick dwelling, at 590 and 592, were all completed. The Griffin Block, north of Indiana; Dr. Collyer's church; the New England church; Dr. Isham's pressed brick building; O. F. Fuller's double brick, at corner of Oak street; Mrs. Johnson's double brick residence; a three-story residence, No. 460, and the Potter dwelling, corner of Schiller street were completed in November, 1872.

What has been written of South Clark street in regard to the style and condition of buildings before the fire, applies equally to North Clark street of that period. It was a Turkish bazaar in many respects, but while the residents drank beer in extraordinary quantities, in opposition, as it were, to the whisky drinkers of South Clark street, morality was held in higher esteem. It had no characteristic of the "Garden City"—board hovels, balloon frames, an odd brick building, an odd pretentious residence and buildings of miscellaneous primitive styles, all had to surrender to fire, all had to make way for the Chicago of the future, the New Chicago of the present. Ewing's warehouse, a brick-and-stone building, fronting on Clark, extending back two hundred feet along the river, soon rose above the ruins, opposite Gowen's new three-story \$60,000 marble front. Just north of the bridge, on the west side of the street, the three-story brick house of Appel, Knoté, Lang, Flentey and Huek were built; the McCormick block, on northeast corner of Kinzie; the Lombardier three-story brick at Kinzie; E. K. Rogers' \$40,000 five-story brick, with stone facings, Nos. 63 and 65; S. G. Taylor's marble front, three-story building; the four-story Humboldt block; the Peter Hahn three-story building, Nos. 236 and 238; Mrs. Bussick's four-story brick, Nos. 178 and 180; the five-story Purple block (Clarendon house), stuccoed front, Nos. 148 to 158; Beek & Wirth's four-story brick tobacco warehouse; Swarth Brothers' three-story grocery building, Nos. 383 to 387; the Turner hall and the North Chicago Railroad Company's large brick barn. The total number of brick buildings erected on North Clark street from October 11, 1871, to October 11, 1872, was one hundred forty-two, and of frame, one hundred forty-three. During the winter of 1872-3 several brick houses were begun.

Wells street, ambitious to excel North Clark street in the number of buildings and volume of trade, fell at the feet of its rival in 1872, and has remained second in the race down to the present time. The E. A. Jacobs' four-story stone front at the corner of Michigan street was the first important house which rose above the *debris*. At the close of October, 1872, this and two other stone fronts were the only buildings with any architectural pretensions on the street, if the large frame building of J. Coreoran, known as the Hatch house, near the Northwestern railroad depot, may be excepted on account of its constructive material. During the year ending October, 1872, there were two hundred and thirty frame houses, six one-story brick,

sixteen two-story brick, twenty-six three-story brick and one four-story brick, erected on this street.

Franklin street boasted, in October, 1872, of one hundred and twenty-two new frame and six brick buildings. The pressed brick house, at the corner of Huron street, erected for the Evangelical Lutheran society, and the two two-story, 150x300 feet, brick buildings of the Union Brass Manufacturing Company and the Crear Adams Company, were the only ones deserving special notice.

Market street could boast at this time of the six-story Milwaukee brick block, known as the Moulton house, built by J. W. Moulton at a cost of \$150,000. St. Joseph's church and school building and the Home of the Good Shepherd were prominent landmarks among the one hundred and forty-two frame and three brick buildings erected that year.

Kingsbury street showed one hundred frame and three brick buildings at the close of the first year of rebuilding. Townsend street could not show even one brick, and Sedgwick street only two or three. Clybourne avenue took the lead of all the semi-cross streets within the north division in the number of brick buildings, but on this as on the other streets cheap balloon frames sprang up like mushrooms from a hotbed.

The impetus given to West Madison street by the misfortunes which had fallen on the residents of the burnt territory, brought it into the front rank of business streets. At Nos. 155 and 157 the W. Patterson four-story stone front was erected at a cost of \$21,000; on the northwest corner of Madison and Halsted R. Parker erected a \$65,000 five-story brick building; at No. 189 D. Cole built a \$20,000 iron-and-stone house; J. H. Davey erected his \$125,000 four-story brick block on northwest corner of Green street, and his \$35,000 three-story brick at Nos. 218 to 228; William Rapp, a \$15,000 three-story stone at No. 217; Hitchcock one at No. 219, and Philo Carpenter a similar building at No. 221. The Ewing \$140,000 four-story brick block on southwest corner of Madison and Peoria; the C. C. P. Holden \$40,000 four-story stone, Nos. 298 and 300; the Charles Spry \$30,000 three-story stone, Nos. 278 and 280; the Partridge \$30,000 three-story brick adjoining on the west; Dr. Glacius' \$20,000 three-story stone, No. 324; Clarke & Browne's \$18,000 three-story brick, Nos. 402 and 404; Henry Ladrer's \$12,000 three-story brick, No. 271, and E. H. Goodrich and James Ward's \$9,000 three-story brick, No. 203, were among the leading buildings erected in 1872.

The Washington house was built in 1872 and operated under the name Skinner house until 1881. It has a frontage of one hundred feet on Madison and sixty-five on Canal and is four stories in height. Although built in 1872 it possesses many of the characteristics of the large brick houses erected before the fire.

Halsted street, like West Madison street, received material benefits from the great fire. Within the year ending October, 1872, James Parker's three-story brick, Nos. 44 to 50, was built at a cost of \$30,000; C. R. Gardner's \$60,000 two-story brick—the Academy of Music—sprung into existence; Guthman's \$17,000 three-story brick, No. 95; Meredith's \$16,000 three-story stone, No. 89, and C. C. Merrick's \$10,000 three-story stone took the places of board houses.

The number and cost of permanent buildings erected from October, 1871, to October, 1872, are shown in the following table:

	No.	Cost.		No.	Cost.
South Water street.....	45	\$ 1,514,000	River street.....	13	\$ 435,000
Lake street.....	49	3,042,000	Michigan avenue.....	13	874,000
Randolph street.....	33	2,021,000	Wabash avenue.....	45	3,657,000
Washington street.....	28	1,930,000	State street.....	71	6,246,000
Madison street.....	48	2,533,000	Dearborn street.....	32	2,870,000
Monroe street.....	20	1,558,000	Clark street.....	75	6,739,000
Adams street.....	4	170,000	La Salle street.....	33	4,863,000
Jackson street.....	5	77,000	Fifth avenue.....	32	642,000
Van Buren street.....	12	239,000	Franklin street.....	22	568,000
Congress street.....	5	125,000	Market street.....	13	490,000
	249	\$13,209,000		349	\$27,384,000

This shows a total number of five hundred and ninety-eight buildings in the south division of the burnt district exclusive of frame buildings. During the ensuing year the progress of building was equally marked, so that by October, 1873, Bayard F. Taylor chronicled his observation of the city's wonderful revival in the following lines:

“I found Chicago, wood and clay,” the royal Kaiser cried,
And flung upon the sleeping mart the mantle in his pride;
It lay awhile—he lifted it, and there beneath the robe
A city done in lithograph, the wonder of the globe;
Where granite, grain and marble heart, in strength and beauty wed,
“I leave a mart of palaces,” the haughty Kaiser said.

On the opening of the rebuilt Chamber of Commerce, October 9, 1872, Mayor Medill stated: “This mighty work of reconstruction and rehabilitation could not be so far advanced by any possible effort of our unaided citizens. Nothing but the enormous aid in money and materials that we have received, has enabled us to achieve such wonders in so incredible a space of time. With our unsupported strength we could rebuild and restore no faster than we could produce surplus earnings and devote spare time to work. But the capitalists and craftsmen of America and Europe stepped forward and proffered the assistance that could be employed. The citizens of Chicago supplied the daring, the enterprise, the brain-power, the plans, a large amount of muscle, and whatever capital and credit the flames had spared. Our friends and correspondents supplied everything else. The extent of this help is not easy to calculate; but the best approximate estimate I can make, from the data in my possession, makes it equal to one-half the total loss sustained in the capital destroyed and earnings of labor and business lost by reason of the fire. I estimate the destruction of property by fire at \$160,000,000, and the loss on employment and business at \$30,000,000, or a total of \$190,000,000, as the consequence of one day's work of the fire fiend. Against these losses we have received as follows:

On insurance.....	\$40,000,000
Losses on real estate.....	10,000,000
Loans on personal securities.....	2,000,000
Loans, compromises with burnt-out merchants, deductions on claims.....	6,000,000

Donations to the poor in moueys and goods	\$7,000,000
Loans and donations from relatives and friends, to the poor.....	2,500,000
Rebates under relief bill.....	1,000,000
Purchase of Customhouse lot.....	1,250,000
Investments here from abroad	6,000,000

“To this may be added insurance that will yet be paid, \$8,000,000; Federal expenditure on Custom House, \$3,000,000, and balance of canal lien from the state, \$2,000,000, or an addition of \$13,000,000, making a total revenue of about \$90,000,000. In addition to all this we had the assistance of the skill and labor of 30,000 able-bodied men from other places since spring to help rebuild the city and supply other demands of labor.”

Writing under date, February 21, 1891, Mr. Medill says: “The work of building and borrowing went on without abatement and under full headway for another year. When the great panic of 1873 struck the city, progress was arrested for a time, but did not stop, it only slowed down. Still the setback was a severe one. I think I underestimated the losses on real estate during the twelve months succeeding the fire. My present belief is that they exceeded \$15,000,000, and may have been close upon \$20,000,000. I have always thought since then that I got that important item much too small. It would be safe to estimate the loans upon personal security at fully \$4,000,000; compromises and deductions can be safely put at \$8,000,000, some of which money, however, was afterward repaid. I am now satisfied that investments from abroad were not less than \$8,000,000, and they were probably \$10,000,000. The total loans, aid, donations and insurance received aggregated fully \$100,000,000 during the twelve months succeeding the fire.” All the credits, therefore, under the new lights, since the writer of the above delivered his address in October, 1872, may be placed at \$121,750,000, received by Chicago prior to October 9, 1872, against a total loss of over \$200,000,000 by the fire of October 9, 1871.

The *Real Estate and Building Journal* in its estimate of the fire of 1871, placed the total loss on buildings at \$53,080,000, and states that this estimate is probably the first correct one ever published. Itemized, it is as follows:

Eighty business blocks.....	\$ 8,515,000
Railway depots, warehouses and Chamber of Commerce.....	2,700,000
Hotels.....	3,100,000
Theaters	865,000
Daily newspapers (buildings).....	888,000
One hundred other business buildings.....	1,008,420
Other taxable buildings.....	28,880,000
Churches.....	2,989,000
Public schools.....	249,780
Public buildings not taxed.....	2,121,800
Public property.....	1,763,000

The value of all the real and personal property in the city at that time, taxed and un-taxed, was estimated at \$575,000,000, and of this \$186,000,000 was destroyed.

The Vienna (Austria) *Freie Presse* of March, 1873, in an editorial says: “Scarcely have two years elapsed since the 9th of October, 1871, the day on which arose that terrible con-

flagration which converted the largest, most beautiful and most prosperous city of the West into a heap of ruins, such as seemed destined forever and irrevocably, to cover not only the whole property, but the very existence of 400,000 people. And to-day this very city stands rebuilt upon its former site, resurrected in rejuvenated beauty, swelled with enhanced energy and enterprise, at the threshold of a grander future than the one which for all time was deemed dissolved in the flames. * * * * We people of Vienna, have, above others, some idea of the rapidity with which, under favorable circumstances, a new city may spring up from the soil, and new industries be brought to life. But what was achieved in Chicago under unfavorable conditions, in the brief space of eighteen months, stamps our doings as miserable, shortcoming attempts. To us it is an enigma, a miracle, whose secret to penetrate and whose real condition to explore, is with us a pressing commandment of necessity. * * * All modern extensions of European cities sink into insignificance when compared with what was created, far in yonder American West, by the united and well-directed energy of a simple commonwealth."

CHAPTER V.

GOTHIC AND RENAISSANCE.

FINDING October 9, 1872, the record for the year shows a marvelous, if not miraculous, growth, but it was only the beginning of a city. Year after year the lines of permanent buildings were extended, until Chicago could boast of regular, well built-up thoroughfares.

From April, 1872, to March 31, 1873, there were 1,233 permits issued, for the construction of brick buildings, and 301 permits granted for the removal of wooden buildings. The new fire ordinance, under which the permits were issued, was so radical in character as to win opposition from the majority of citizens, and particularly from the working classes, who were most seriously affected by it. In 1873-4, permits to erect 935 brick buildings and 175 to remove wooden buildings were issued. The respective numbers for 1874-5 were 712 and 244, or 2,881 building permits since February 21, 1872. The official record of the issue of permits, by distinct years, shows that in 1873 there were 1,000 building permits issued, to cover 42,300 feet, at an estimate cost of \$25,500,000; in 1874, 757 permits, to cover 33,065 feet, at a cost of \$5,785,541; in 1875, 875 permits, to cover 55,479 feet, at a cost of \$9,778,080, and in 1876, 1,636 permits, to cover 43,222 feet, at a cost of \$8,270,300. In 1877 there were 2,698 permits issued, and in 1878, 2,709. The estimates of cost do not include the large sums expended on the federal, county and city buildings. The number of buildings in 1877 did not reach the number of permits, being only 1,389, with a frontage of 38,033 feet, and costing \$6,922,649. In 1878 the number of buildings erected, 1,019, showed only 31,118 feet, or about six miles of frontage, and cost \$6,605,200, the least in the seventeen years since the fire. In 1879 a slightly larger frontage was built over, but the expenditure did not amount to that of 1878, the permits numbering 1,093, the frontage measuring 33,311 feet and the cost approximating \$7,500,000.

Building Commissioner John M. Dunphy, in the first general report of his department, made to the council in 1890, referred to the rebuilding of the city, thus:

"The five years following the great fire of 1871, were the busiest five years in the way of building ever known in this city or in this or any other country. During those years the burned district, which had been swept by the fire, was partially built up. There were destroyed by the great conflagration 15,768 buildings, including 175 manufacturing estab-

ishments, which were valued at \$49,239,000. The improvements thus destroyed covered 2,200 acres of ground, including the heart of our city. The great building mania which followed in building up that which the fire had burned down was not wholly confined to the burned-out district, for it proved infectious to the entire city. And while the great bulk of improvements were made during the few years following the fire to replace buildings destroyed by the fire, there were great numbers erected outside those limits, and some of the best buildings seen to-day in the district described were built between October 10, 1871, and January 1, 1877. The amount of building, however, in the burned district during the dates above given was perfectly enormous. Many of the public buildings, both government, city and county, were well under way or completed, and while the masses of our people were engaged one way or another in the reconstruction, let me say that the pride exhibited by many of the owners of these structures was truly wonderful. There appears to have been an unceasing rivalry as to who should have the best improvements, and one vied with the other to that end. No money was spared in embellishments that could add to the owner's property. Indeed, the fine architectural designs and embellishments that entered into the reconstruction during that period are plainly observable to-day, and will last for all time. The amount expended during those five years, or up to January 1, 1877, in the burned district, no one can tell. It was an immense sum, but without any official data, it is hard to approximate the amount with any certainty. However, it is my belief, based upon personal observations, both before and since the great conflagration, that there was expended during the five years mentioned, a sum equal to the amount of losses in buildings, caused by the fire of October 8 and 9, 1871, which was \$49,239,000. There is no doubt in my mind that this sum was expended, and probably more instead of less, to say nothing of the amount put into buildings outside the burned district, but inside the city limits during the same period of time."

The Courthouse and City hall described in a former page is a dual structure, with the front of the county section on Clark street and that of the city section on La Salle street. The length on each of the streets named is 340 feet and the width of the two sections 280 feet. In November, 1872, the city and county conjointly advertised for plans. They offered a premium of \$5,000 for the best plan, \$2,000 for the second and \$1,000 for the third best. Fifty plans were received, but nothing was done until 1877, when J. J. Egan's plans for the two sections were accepted. Before it was completed the estimated cost of the city building was \$1,642,000, while that of the county building, after several increases, finally became \$2,424,628. In reality, however the cost of the buildings was about \$5,000,000. The architect adopted the style of the French Renaissance, with its magnificent substructure and columnated superstructure, but the domes were ultimately discarded. Four massive granite columns mark the Clark street entrance. Upon them facades of polished granite stand in relief. The two extreme columns bear the interesting data which perpetuates the names of the commissioners under whose direction the house was constructed and the names of the artisans who performed their part of the work. The chiseled facades bear the following inscriptions:

Anno Domini 1877.
Board of Commissioners of Cook County.
Charles C. P. Holden, Chairman.

Charles C. Ayars.
James Bradley.
P. M. Cleary.
John Conly.
Patrick Carroll.

Theodore Guenther.
Henry C. Senne.
George I. Hoffman.
Henry J. Lenzen.

John McCaffrey.
Michael Mulloy.
K. C. Schmidt.
John Tabor.

The other massive block of granite tells this legend:

Anno Domini 1877.
James J. Egan, Architect.
William Handley, Superintendent.
Contractors:

Henry Harms. Wm. McNiel & Son. Hinsdale-Doyle Granite Co. P. J. Sexton.

As completed in 1882, this architectural pile presented to Chicagoans, for the first time, a true idea of art in the exterior of buildings. The heavy stone work in the first story, the grand stone steps leading from the sidewalk to the first floors, the Corinthian columns of polished Maine granite with beautiful capitals forming the colonnade for the third and fourth stories, and bearing the grand architrave, frieze and cornice, all described in chapter one, are noble in design. In May, 1891, the question of adding two stories to the county building was discussed. The county architect, Wegeman, stated that the exterior walls were in good condition, but that the foundations of the inner walls were unsafe. The weight of the proposed two stories would be about 10,690,000 pounds, and the cost about \$171,000, including trusses. The sentiment of the people is opposed to this heightening of the Courthouse, and, for this reason, its extension upward has not yet been undertaken.

The city building is, in fact, a part of the county building, varying from it only in a few ornamental details and in being constructed of Bedford stone. During its construction the vampires were watched so closely that the necessity for removing heavy cornices and daubing the walls has not been presented. The interior is much more ornate than that of the county building, and, all in all, the city is pleased with its official temple, its greatest example of the Renaissance.

The Criminal court and Jail buildings, on Michigan, Dearborn and Illinois streets, were erected in 1873, at a cost of \$375,000. The Courthouse is an old style public building (fronting 140 feet on Michigan street and 65 feet on Dearborn avenue) constructed of native limestone. Connected with the court proper is the large brick house (fronting 137 feet on Dearborn and 43 feet on Illinois street) while adjoining this on the west is the jail building, fronting 141 feet on Illinois street. Even in that semi-business neighborhood the houses appear out of date, old and jagged. The style is adapted Roman.

The Federal building, known also as the Postoffice and Customhouse, was completed in 1879. Its architectural style is outlined in the first chapter. A few years after its occupation by the postal authorities the era of repairs was ushered in, and in December, 1885, Superintendent Bailey estimated the cost of such repairs at \$94,300. He reported that many of

the cornice stones were breaking and cracking and needed replacing. He advised the painting of all the stone work to save it from harm through rain, frost and sunshine. The interior looked shabby, the plastering needed repairing and rendered frescoing necessary. Among the items in the estimate were: Salary of superintendent and contingent force, \$7,700; oiling doors and sash and painting iron doors and window frames for interior, \$6,000; resodding grass plats and shrubbery decorations, \$1,000; caulking and painting stonework, \$15,000; repairs to tiling of the stairways, \$2,000; new tiling in water-closets and repairs to stone work in the same, etc., \$1,500; repairing flagging and basement cement floors, \$1,500; painting the interior of the building, stone work, window frames, etc., \$20,000; making proposed changes to the interior of Postoffice, \$25,000; contingent fund for repairing small defects during the year, \$1,500; painting roof and valleys and gutters of the same, \$1,600; replacing wash-stands, water-closets, etc., throughout the building, \$6,000; plastering, \$4,500; painting outside and caulking interior skylight, \$1,000. The same story of decay has been repeated annually since 1885, and now this grotesque outrage on the building art threatens to bury the officials. This is a city of surprises, but the collapse of this building would be no surprise.

The American Express Company's office, on Monroe street, must be considered the first work of Richardson in Chicago. It is also given in the first chapter as an illustration of the coldest mixture of Gothic and other forms extant. The Lakeside building is also referred to in that chapter.

The Ayers building, on the southwest corner of State and Monroe, adjoining the express company's house, shows the disposition of architects to follow the lead of Richardson. It is a substantial building, claiming many good architectural points, but wanting, exteriorly, in appearance of warmth.

The McCormick block, Nos. 4 to 8 Lake street, completed in 1872, is a five-story-and-basement building, fronting sixty-four feet on Lake street and one hundred and twenty feet on Michigan avenue, the basement being 80x140 feet. Ohio stone was used in the fronts and French plate glass in the windows. Its architectural features are commonplace, belonging rather to 1870 than to 1872.

The Heath & Milligan block, 170 and 172 Randolph street, was completed in March, 1872, or within five months after the fire. Milwaukee pressed brick was used in the construction of the front. The Oriental, on La Salle street, is one of the earliest houses on that street. A Corinthian portico, colonnade and labeled windows mark its well-defined facade. The Western News Company's four-story-and-basement building, Nos. 40 and 42 Randolph street, was erected in 1872 at a cost of \$100,000. Illinois stone was used in the front.

The Gardner house was completed October 9, 1872. It fronts one hundred and twenty feet on Michigan boulevard and one hundred and seventy-one feet on Jackson street, is six stories and mansard attic in height and interiorly presents some of the best workmanship of that period. Philadelphia pressed brick was used in the fronts of this building. The Ballard building, 163 and 165 Wabash avenue, was erected in 1872. The ornamental iron front carries

five stories on the Wabash avenue and Monroe street facades. The four upper stories are compressed into one by great pilasters, which receive straight arches below the cornice, giving a vertical building with square, double windows each side of the single one in the center of the facade. The five-story-and-basement building, Nos. 121 and 123 State street, erected in 1872, stands on the site of the Western News Company's old building. It is 48x150 feet, with French plate glass windows in front, light court and other improvements overlooked in other large buildings of that period.

The Pike five-story building, 166 to 172 State street, was erected in 1872 at a cost of \$140,000. It fronts eighty feet on State street and one hundred and twenty on Monroe. The first story shows iron construction and the four stories above Lemont stone slabs.

The Boyce building, 125 and 127 State street, was built in 1872 of Lake Superior brown sandstone in Norman-Gothic style. It fronts fifty-five feet on State and extends east on Madison street 160 feet. The stone work and carving thereon were considered the best work in the city up to that period, as the Superior block on Clark street, opposite the Courthouse, was not then begun. The Ross & Gossage building on State street was erected in 1872, Amherst sandstone being the constructive material of the front, at a cost of \$200,000. It has a frontage of sixty-four feet, a depth of one hundred and sixty feet, and is six stories and basement in height.

The Giles Brothers' building, 266 and 268 Wabash avenue, is a four-story iron-and-stone front house, erected in 1872 at a cost of \$75,000. The pilasters of the first floor merge into brackets and cestophori in the second. The third and fourth stories show excellent work in stone, while the cornice exhibits the best workmanship in galvanized iron. The Sturgis five-story building, 121 and 123 State street, was completed in November, 1872, at a cost of \$100,000. This house, 48x150 feet, shows a Lemont stone front, French glass windows, and large light court.

The Major block, purchased in 1891 by Leander J. McCormick from S. A. Crozer, of Delaware county, Pa., for \$625,000, has a frontage of 135 feet on La Salle street and sixty-six feet on Madison street. A five-story basement-and-attic office building covers the entire lot. This building was erected in 1872, and is valued at \$80,000, while \$30,000 was expended in 1890 in furnishing elevator service and in remodeling the building. The gross rental is \$42,000 a year. Without allowance for the building the price per front foot for the Madison street frontage is nearly \$9,500. The La Salle street frontage is valued at almost one-half this amount. A more tangible idea of the value is gained from the fact that this transaction sets a valuation of over \$70 on each of the 8,910 square feet on the corner. The building is in the Renaissance style as observed here generally after the fire.

The Metropolitan block, on the northwest corner of Randolph and La Salle, one of the first buildings erected after the fire, and one of the first six-story brown sandstone houses, was for many years considered the finest office building in Chicago. The erection of so many new and modern office buildings farther south rather dropped it out of the popular mind. It always rented well, however, and is a paying piece of property. The northward movement of

improvements in 1890, resulting in the remodeling and modernizing of the Northern, the Chamber of Commerce, the Oxford and the La Fayette buildings has brought the Metropolitan block into notice, and its proximity to the courthouse makes it much sought after for certain classes of offices, while the increase in land values has made it necessary to increase its income earning power. Hence the addition of two stories and the improvements of 1891.

The Bennett Medical college building, 511 and 513 State street, was one of the first large buildings erected on State street in the seventies. It is a five-story house, 40x100 feet, forming a front for the hospital building in the rear.

The Academy of Music, built on Halsted street just south of Madison street, in 1871, for William B. Clapp, was to the west side of that period what Crosby's opera house was to the central business district before the fire. The Academy went down in flames, was rebuilt, and in later years was redecorated.

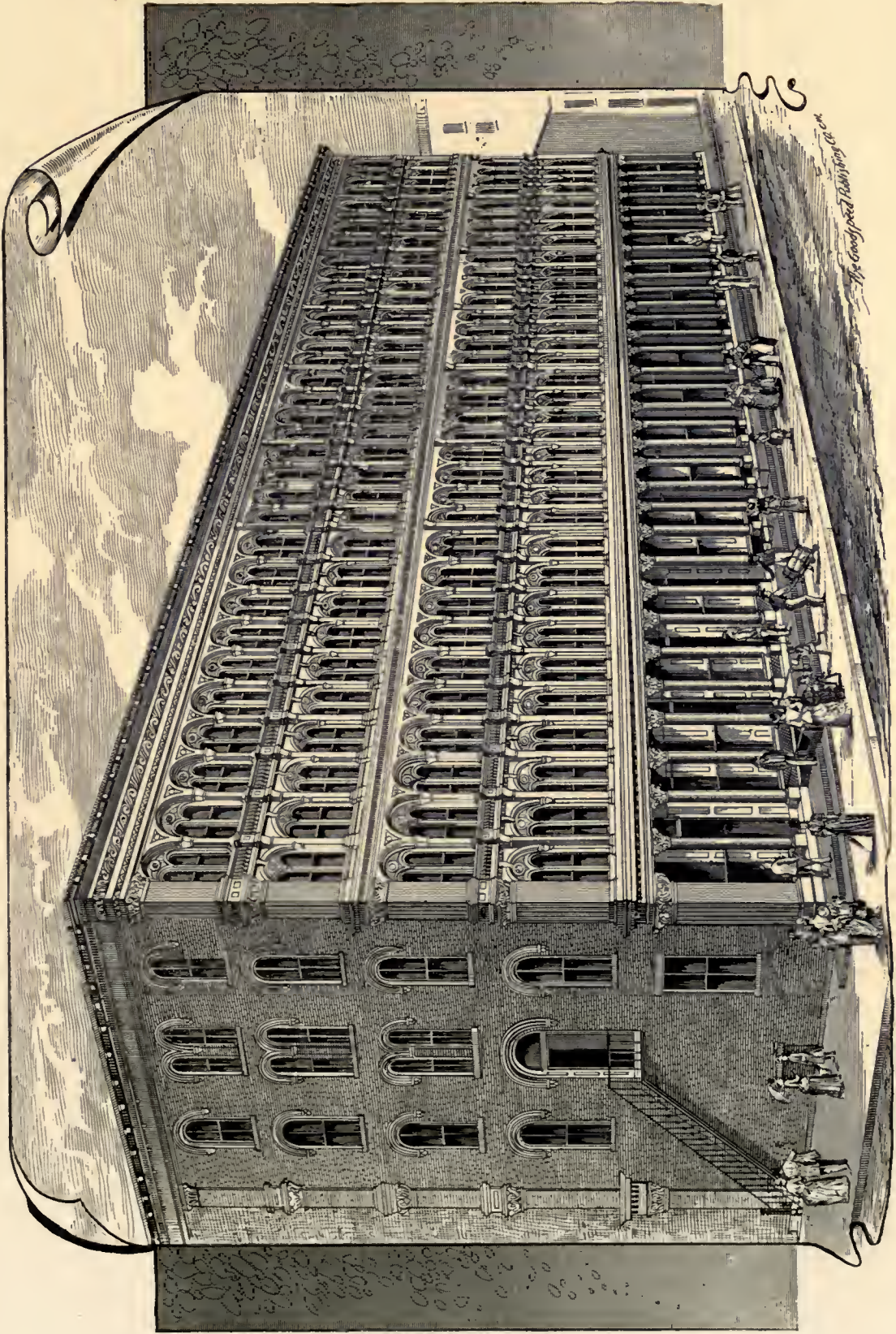
Hooley's theatre was completed in 1872 and dedicated on the same day the great old Board of Trade building on La Salle and Washington streets was opened. The entrance and oriel windows modernize the front, but the cornice leaves little impression of latter-day style. The interior is well arranged and decorated.

The Grand opera house, 87 and 89 Clark street, originally Bryan hall, was known as Hooley's opera house for a short period before the fire. In 1872 the "Billiard palace" rose above the ruins of Bryan hall, which was subsequently known as the Coliseum a strange mixture of flowers, sandwiches, drinks, music and bacchannalian worship. In 1880 it was remodeled and the name changed to The Grand opera house or Hamblin's opera house. The exterior is old style.

The Rawson, on the east side of State street, north of Monroe street, and the building on the southwest corner of Adams and Wabash, occupied by Walker & Co., present almost similar features. The Corinthian columns, resting on high panelled pedestals and fluted in the upper part of shaft, are used with marked effect instead of pilasters. Between each set of columns is the double arched window with small pillar supporting the center impost. The style is Americanized Italian, massive in a detached house, but lost in a block of buildings.

The National Life Insurance building, on La Salle street, is one of the great structures erected after the fire. Its fluted pilasters, window labeling and its heavy cornice carried on brackets and modillions will always give it a place among the great pieces of architecture of the city. The entrance, too, deserves more than a passing notice. Two broad pilasters, resting on pedestals carved to represent a mound of rocks, bear, in alto relievo, the representation of lions. For the keystone of the arch a great eagle is used, and above this is the entablature. The facades are in ashlar with heavy substructure, vermiculated at regular intervals. This is the northern neighbor of the Nixon building, on the northeast corner of La Salle and Monroe streets, which battled with the great fire of 1871 so heroically.

The Marine bank building, on the southeast corner of Lake and La Salle streets, was erected in 1872 on the site of the old building, extended on Lake street to eighty feet, or



THE OLD IRON BLOCK, 1856-7.

ITALIAN ARCHITECTURE.

VENETIAN-ROMANESQUE ORNAMENT.

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twenty feet greater frontage than that of the house destroyed in 1871. It is a four-story-and-basement Lemont stone building, Romanesque in style, showing central and corner piers, horizontal bands, arched windows and doors, heavy cornice and pediments above the centers of the facades. It is one of the enterprises of J. Y. Scammon.

The old First National bank building, on the southwest corner of State and Washington streets, was completed in 1872, at a cost of \$295,000, \$75,000 of which was expended on restoration after the fire. It was considered a fireproof house, iron, stone and brick being the constructive material; but it did not prove itself so in presence of the great fire of 1871, for the inner vaults were the only portions of the building untouched by fire. Part of the walls fell in and the iron work was twisted or melted. It was a Florentine building, with balustraded portico in cut-off and pediment above the cornice. Prior to the introduction of modern houses, the old First National bank was considered a rare architectural work, and was spoken of in connection with the Palmer, Tremont, Field and other leading houses.

The Merchants Savings Loan & Trust Company's building, on the northeast corner of Dearborn and Madison streets, was erected in 1872. It is a five-story ashlar stone house, 40x80, built in attractive style and well finished interiorly in marble, ornamental tile and fresco work.

The Fidelity Savings bank, erected in 1872, is a superior building to the old bank, completed before the fire, the vaults of which withstood the test. The new building, vaults and ground cost about \$200,000, the owners, Bryan & Haines, agreeing to give a four-story stone-and-brick house protected against fire, so far as the knowledge of fireproofing in 1872 might permit. The stone front shows that attention was paid to details and the interior reflects the promise of safety. The iron and vault work, in the bank proper, is artistic as well as strong.

The Revere house, on the corner of Clark and Michigan streets, was built on the site of the hotel of 1861, by Thomas Mackin, in 1872. It was one of the first large architectural buildings erected on the north side immediately after the fire. In 1884-5 two attic stories were added, by J. D. Fanning, the lessee, and a corner bay, springing from a corbel, at the level of the old cornice, constructed. The building fronts one hundred and fifty feet on Clark, and one hundred feet on Michigan street, is six stories high, contains one hundred and fifty rooms, and has nine entrances and exits. The Corinthian hall, 100x100 feet, is connected with the hotel by a covered tin bridge.

The Nicollet building, on Fifth avenue, was erected immediately after the fire. Attention was bestowed on its exterior appearance, and as a result, a fine ashlar stone front structure memorializes the architectural ventures of the time on that thoroughfare. Opposite, on the west side of the street, a brown stone building, inclining to German architectural forms, was subsequently erected.

The Staats Zeitung building followed the Times building in the order of construction. The style is common to that of the better stone houses of the period.

The Evening Journal building, built immediately after the fire, is French Renaissance

from the pedestals to the finial. With a limited frontage, it shows a facade of four high stories, a sub-story and an attic story of more than fair architectural proportions. The clustered Composite columns and pilasters, each annulated and fluted, of the same order, with two square piers at each side, support the superstructure. The central columns form a portico, and this, repeated in abridged form on the second and third stories, gave two colonnades. On the level of the third floor is a square balconette, done in balusters, extending beyond the clustered columns. Above the level of the fourth floor the columns carry a chaste pediment. Pilasters, in couples, mark the central projection of the fourth and fifth stories, each set carrying a heavy cornice on floor level, and above the fifth cornice, a square gallery or balustrade at the base of the hip roof or projection of the mansard. In the first and fifth stories the windows are square, and so is the recessed window in the colonnade of the second story—all other windows show the arch and keystone, with heavy labeling in attached columns. The side windows of the upper attic are capped with rich pediments, and the central window by a frontal. The *ensemble* is well worth study, for each part is based on a definite style. In the remodeling of this building, the vandal utilitarian abolished the portico. He sought more light and less ornament.

The Times building, erected after the fire, is constructed of Parma (Mich.) sandstone. It is a five-story-and-basement structure, 80x183 feet, and substantial beyond comparison with any of its cotemporaries. It shows an adaptation of the Vetruvian style of order above order and arcade above arcade, but the horizontal outweighs the vertical in the facades. It is a mixture of the Italian and French, with balconettes, pediments, pilasters, engaged pillars, heavy cornice and grand parapet, all put together in artistic shape, and all subservient to light and accommodation.

The Tribune building is one of the first brown-stone structures erected after the fire. Its labeled windows, pilasters, cut-off corner, frontal and regular pediment are its only architectural features, if the fact that every room is lighted and exposed to live air be considered outside the domain of architecture. The entrance to the upper offices of the building is scant and crowded, and the elevator shaft is dark. The style is Italian.

The Honore building on the northwest corner of Dearborn and Adams streets was erected in 1873-4. It is a six-story-and-basement house in the Corinthian-Doric dress of the Renaissance, showing order above order. Thus, in the center of the Dearborn facade and in the first story, the Roman-Corinthian appears and in the stories above the Roman-Doric column controls. Designed by C. M. Palmer, the architect of the Palmer house and of the Madison house, it reflects the ideas of ornamentation which prevailed here after the fire. Venetian windows, such as those in the Grimani palace, in Doric rather than Corinthian company, may be seen in this building. Balconettes, too, find a place here with the deep frieze, heavy cornice and high retreating parapet. However strange it may appear to find on Dearborn and Adams streets a reflection of Venice in stone, the fact remains. It is San Michele's imitation of the ancient Roman architecture (revived in the fifteenth century) redressed in the nineteenth century for Chicago use. The building is now (1891) within measurable distance

of improvement. In 1887-8 the property was purchased by Hincley and Cooper. In the latter year the dream of enlarging and remodeling it was entertained. The building was examined by experts who reported the construction of the walls to be very strong, and that four stories could be added, making it ten stories high. To do this and to make the other improvements contemplated (which include thorough fireproofing) will cost from \$350,000 to \$500,000. The lot is one hundred and fourteen feet on Adams street and one hundred and ninety on Dearborn, but ninety feet of the frontage on Dearborn street is one hundred and forty feet deep, and there is a rear building about 26x90 feet, which is hidden from view from Dearborn street. It is proposed so to change these buildings as to give a court about seventy feet square near the center of the lot which will afford light to all rooms.

The Howland block varies only in a few details and in its height from the Honore. The Corinthian rules above the first story where the Ionic holds sway. Pilasters of the respective orders exert a strong and salutary influence on the building. Again the system of fluted columns and pilasters is very much in excess of that which obtains in the Honore, giving the Howland an agreeable vertical facade and showing a combination of strength and beauty. The height is five stories and basement. The frontal above the cornice in the center and the pediments at the ends confirm it as belonging to the Renaissance. Its location, however, militates against it when compared with the location of the Honore; it is not so well known as the corner building, and it is opposed by the modern Commercial styles on the east side of the street. With all this opposition, it is creditable to the architects, builders and owners, and stands today a monument to the high appreciation in which they held the building arts in 1872-3.

The power of syndicates or of consolidated moneyed interest to bring forth large buildings was first demonstrated here during this period in the building of the old Exposition on the lake front, and next in 1879, when the erection of Central Music hall was considered. The financial panic, 1873-8, militated against art in every form and delayed in an especial degree the era of great buildings.

The Palmer house is described in another page, in connection with the courthouse as an illustration of one form of the Renaissance. It is undoubtedly a beautiful building, rich in ornament and most creditable to the architects and builders.

The Tremont house did not rise from the ruins of the old building until 1874. On its completion Chicago boasted of one of the most beautiful hotel buildings in the Union. It is five stories in height, basement and attic, crowned with five two-story towers or pavilions. The exterior walls, of the best Amherst sandstone, present some of the finest effects of the French Renaissance. The interior arrangements do not bring a blush to the beautiful exterior walls; for all the house-builders' knowledge of 1874 was requisitioned to render the house perfect for hotel purposes. Designed by J. M. Van Osdel, at a time when the Clifton house, the Reaper, Hawley, Equitable, Farwell, Law and Jewett blocks were in the hands of his draughtsmen, it is an enduring monument to its owners and builders. With its wealth of columns, pilasters, piers, balconies, balconettes, cornices, balustrades, dormers and pavilion domes, it is a building which holds a high place in the estimation of architects.

In 1873 the idea of consolidating interests in corporate form for building purposes was first given practical effect, in an extensive way, at Chicago. The Inter-State Exposition Company organized with a capital stock of \$250,000 to build and maintain a structure for fairs, conventions and annual expositions of art and industry, the stated object being to serve the public on an eleemosynary principle. On this basis the city granted a revocable lease of valuable ground at the rate of \$500 per annum, and on this ground a peculiar structure was erected. For the past twelve years it yielded from four to seven per cent on the capital stock to A. F. Seeberger, John P. Reynolds, Wiley M. Egan, J. B. Farwell, J. Irving Pearce, J. W. Ellsworth, T. W. Harvey, N. S. Bouton, and other stockholders. On June 3, 1873, the work of construction was begun, and within ninety-six days a building 800x240 feet in extent and 110 feet high was reported complete. In comparison with other structures it was raised in the shortest time, for Haverly's theatre, of later days, a much smaller house, occupied ninety days. The glass roof in iron frame work, the domes and pavilions without and the grand gallery, all round the interior, are the only features approaching architecture.

The Marine hospital was erected in 1868-73 at a cost of \$458,000. As completed its interior was better adapted to barrack than to hospital uses; but in 1882 the errors of the United States architect were corrected at an expense of over \$48,000. This house is a substantial brick structure, four stories high and three hundred and sixty feet long. Sanitary science has done much to render it a healthy home, while the hospital authorities have reclaimed from the lake sufficient grounds to permit a fair attempt at landscape gardening.

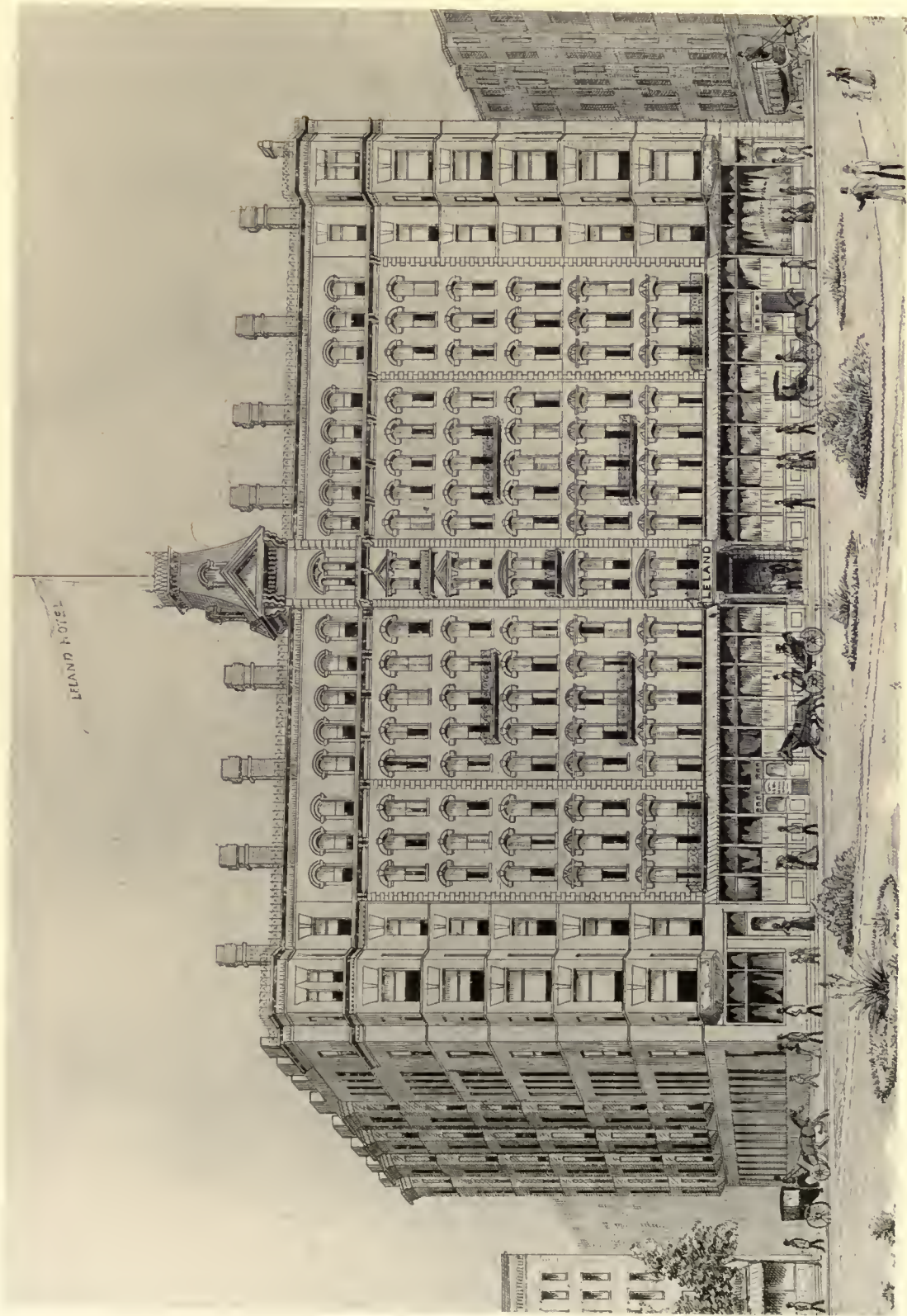
The Normal school buildings on Sixty-eight street and Stewart avenue were erected in 1869-71, at a cost of about \$100,000, J. K. Winchel being the architect. The school proper and the hall were the pioneers of the large public and semi-public buildings of that portion of the city formerly known as the Town of Lake. The style of both buildings is obsolete. It was an elaboration of the schoolhouse idea of old Chicago.

The Alexian Brothers' hospital, on North Market and Franklin streets, is a two-story-basement-and-attic building, erected in 1872 at a cost of about \$50,000. The central tower, four pavilions and mansard roof with fine dormers give to this building an air of warmth, health and comfort wanting on latter-day structures.

St. Joseph's hospital building, on Garfield avenue near Burling street, was erected in 1872. It is a large brick three-story-basement-and-attic house with ornamental roof, after the French style.

The First Presbyterian society's building, on Indiana avenue and Twenty-first street was erected in 1872 at a cost of \$165,000, including ground and furnishings. It is a brick structure with stone facings, heavily buttressed with tower and spire two hundred and sixty feet in height. The side walls are fifty feet and the gables one hundred feet in height. The symmetrical tower and spire were the objective points of the architect, and he succeeded in accomplishing meritorious work.

In 1872 the ruin and site of Grace Methodist Episcopal church were sold and lots purchased on LaSalle and Locust streets, where a \$100,000 Gothic house was erected in 1872-3. The auditorium in basement seats 1,200 and that of the main floor, with galleries, 1,500.



LELAND HOTEL

LELAND

IRISH AND HOTEL.

ADAPTATION OF THE ITALIAN STYLE.

FRENCH ORNAMENT.

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In 1872-3 the large stone Gothic building on Michigan avenue, south of Sixteenth street, was completed (except in a few minor details, such as the spire or exterior ornaments) at a cost of \$175,000, for the First Universalist society.

In 1872-3, after the New School Calvary Presbyterian society merged into the First Presbyterian society, that organization erected the building on the northeast corner of Indiana avenue and Twenty-first street.

A duplicate building of the First Norwegian Evangelical Lutheran house on Superior street was raised in 1872-3 on the foundations, at a cost of \$15,000, which is minus every point of beauty.

The Grand Pacific hotel building was erected in 1871-3, after plans by W. W. Boyington, on the site of a new house completed just before the fire. It cost about \$1,300,000. Occupying the half block bounded by La Salle, Jackson, Clark and Quincy streets, its 500 rooms are well lighted. The exterior of this large Amherst stone building may be classed as French, ground or mixed with Western styles. It is the Palmer house minus the rich exterior decorations of that building; but more lightsome and airy in the interior. The central and corner pavilions on La Salle, Jackson and Clark streets are six stories, attic and basement in height, with the six recessed sections of the three fronts and the rear, on Quincy street, five stories, attic and basement. The third and fourth stories are forced into one in the center and corners of the three facades, and this is repeated in the fifth and sixth stories. The porticoes show light columns, carrying balconies, corresponding with the level of the second floor. Balconettes carried on brackets, mark the same level of the corner pavilions. The ornate pilasters in the projecting sections, the labeled windows in the recessed sections, and the fine dormers in the mansard roof are architectural features. It was an extraordinary building for the time, and even until the completion of the Board of Trade and the other great buildings of latter days, the Grand Pacific was queen of architecture in that district.

The Sherman house was erected in 1872-3, after designs by W. W. Boyington, at a cost of \$600,000. The stone for the Randolph and Clark street fronts, one hundred and sixty-one and one hundred and eighty-one and a half feet, respectively, obtained from the Kankakee quarries, was originally a light brown color, but turned to a grizzly yellow within a few years. The general outline of the other great hotels erected here after the fire is evident in this. The high basement, with entrances from the sidewalk, is a feature, not so ornamental as useful, carried to extremes here. The frontals and pediments in the central and corner projections and the large number of chimneys rising above the front walls, in front of the mansard roof, and, in some cases, above the balustrades of the pavilions, afford relief to a facade spoiled by the plainness of the recessed walls. Like its sister buildings of 1872-3, it escaped criticism and even won the praise of architects for a term; but when the courthouse on the opposite corner was completed the Sherman building was scarcely observable—the greater architectural pile overshadowing it and winning all attention.

The Leland house, on the southwest corner of Michigan boulevard and Jackson street, stands among many of the modern buildings of the city, most of its pioneer neighbors having

disappeared. The general plan varies but little from that of the Grand Pacific. Quoin stones and frontals take the place of the pilasters and labels in the other hotel building, but the ground or first floor shows the architraves rather than the archivolts of the Grand Pacific. Brick is used in the Leland where stone is used in the last-named house, yet the iron balconies and balconettes and the chaste mansard roof, with dormers corresponding with the windows below, give to the Leland an exterior character of which the modern buildings cannot rob it. There are two hundred and sixteen well lighted rooms in this house. Its location is eminently superior. Since its erection, immediately after the fire, it has continued to hold a high place in public estimation.

Within two days after the fire the First German Methodist Episcopal society erected a little house on the ruins of the church of 1857, and in May, 1873, a \$17,000 two-story-and-basement frame building, 44x90 feet, was erected for commercial and religious purposes on Clybourne avenue. Before the close of 1873 a brick building, 60x75 feet and four stories in height, was completed for the Van Buren Street German Methodist Episcopal society, which they owned until 1879, when the mortgage holder relieved them of the onus of ownership. The Mariners' Temple, a five-story house, was completed in 1873. St. Ansgarius Protestant Episcopal church was erected in 1872-3, at a cost of \$21,000.

The church of St. Anthony of Padua, on Hanover street and Twenty-fourth place, was erected in 1873-4, at a cost of about \$150,000. A high rock-faced stone basement with brick superstructure, clearstory and iron dome, show fairly well its Byzantine design. It was the first of the large churches erected in the seventies, and the only Byzantine building in the city at that period.

The rebuilding of St. James Protestant Episcopal church was commenced in 1873 and carried on in the face of many difficulties until 1875, when it was completed at a cost of \$100,000. It is of course a duplicatè of the burnt building, presenting the same Anglo-Gothic outline. The memorial reredas and ornamental windows lend a charm to the interior decorations. The total length of this building is one hundred and seventy-three feet, and the width, across transepts, one hundred and nine feet.

In 1873-4 a number of houses for religious worship was erected, among these the Trinity Episcopal building, a stone house on Michigan avenue and Twenty-sixth street, at a cost of \$160,000. It is a low, cruciform house, substantial and well designed, with belfry on front gable and heavy, buttressed walls, Celtic rather than Gothic in style. The brick and stone house was erected in 1874 for the congregation of the Immaculate Conception at a cost of over \$30,000, and the residence and school building in 1878 and 1885, at a cost of over \$20,000. The Second Presbyterian society erected a stone building on the northwest corner of Michigan avenue and Twentieth street in 1874. January 4, 1874, the North Presbyterian and Westminster societies, working as the Fourth Presbyterian church, erected the Lemont stone building on Rush and Superior streets. This is a cruciform house, well built, and cost \$80,000. St. Adalbert's church building was begun in 1874 and completed in 1884 on the corner of West Seventeenth and Paulina streets. The foundations of other churches were made and a few of the smaller buildings erected.

The fire of July 14, 1874, spread over sixty acres in the south division between Twelfth and Van Buren and Clark streets and Michigan avenue. With the exception of that portion of the newly burned territory north of Harrison and the First Baptist church building, which was destroyed, the houses well merited destruction, for many of them were bad in every way. Their summary removal by fire made way for the superior buildings which were soon after erected.

The Cathedral of the Holy Name is the title of one of the finest specimens of Gothic architecture in the whole western country. Located on the northeast corner of State and Superior streets, this great stone structure shows its symmetrical tower and spire, two hundred and ten feet in height. From the southwest corner of the streets named, the whole facade and south side of this pure Gothic building may be viewed. The corner stone was placed July 19, 1874, and the house completed in November, 1875, at a cost of over a quarter million of dollars. The interior is a study for architect and decorator, the graceful columns supporting a vaulted roof, the marbles, the stained glass windows and the altars are all in harmony with the building. The laws of proportion in Gothic work have been observed to the letter, and this precision is carried into the mere constructional work.

The Moody and Sankey Tabernacle, at the corner of Chicago and La Salle avenues, was erected in 1873-5 at a cost of \$68,000 exclusive of the ground, then valued at \$22,000. It is a pressed brick structure with stone facings, resembling, in some points, one of the modern hall buildings on Milwaukee avenue, the buttresses and open vestibule remaining to disabuse the mind and point out its sacred, as distinguished from the profane, character.

Rush Medical college (new) was erected in 1875 on the corner of Harrison and Wood streets. With the exception of the roof, dormer windows and extension of piers above front wall to the hip-knob, the front of the building shows only architecture in its primitive form. It is a three-story, attic and basement, house, suited perfectly in its interior to college purposes; but as a building inferior in every way to its neighbor, the Presbyterian hospital, erected by the authorities of the college.

In 1875 the foundations of the present brick-and-stone structure, known as St. Anne's church, Fifty-fifth street and Wentworth avenue, were placed. This is a large Gothic house, the first substantial structure in the old Town of Lake to show the application of the Gothic style. In 1887 the spire was placed above the tower, and in 1889-91 the residence fronting on Wentworth avenue and the commodious school and convent buildings, fronting on the boulevard, were begun and completed.

The Chicago clubhouse on the north side of Monroe street, east of State street, was completed in 1875. It was the first modern building in that section of the city, its red brick front with rich stone facings and pretentious entrance conveying a look of elegant ease and comfort not outdone by the north front of the Palmer house opposite. The interior decoration is superb.

St. Paul's Catholic church of 1876, on South Hoyne avenue and Ambrose street, holds the name of the old church of St. Paul's established before the fire.

With pure malevolence toward the fire-god and art, the Swedish Methodist Episcopal society erected a shapeless structure on Oak and Market streets in 1872, which stood until 1876, when a brick house, 70x72 feet, was constructed at a cost of \$30,000. From this large expenditure something graceful was expected, but the expectation was never realized.

The first Norwegian Methodist Episcopal church was erected on Indiana and Sangamon streets, and during the first half of the last decade the Norwegians built a second house on Maplewood avenue and Thompson streets.

In 1861 the Sinai congregation purchased the house of the First English Evangelical Lutheran society on Monroe street, west of Clark street, and in 1865 purchased the Plymouth Congregational church building on the northwest corner of Van Buren and Third avenue, for \$7,500, where the fire found it and reduced it to ashes. In 1875-76 the French Gothic stone house on the southwest corner of Indiana avenue and Twenty-first street was erected at a cost of over \$90,000 after plans by Adler & Sullivan. Were the roofs other than what they are, the style might be classed with that of the basilicas.

The Centennial Baptist building, on the southeast corner of Jackson boulevard and Lincoln street, was begun in 1875 and completed in 1876, at a cost of \$8,000. It is a plain brick structure with some Gothic pretensions. As a building it does not show the progress of art during the first century of the Republic.

The present stone building of Christ Reformed Protestant Episcopal society, on Michigan avenue and Twenty-fourth street, is peculiar in its architectural form. The tower is nondescript, something like the city's fire towers or lookouts, but with this exception the house presents many Gothic lines.

St. Paul's church (Reformed Episcopal), on Washington and Carpenter streets, was purchased in 1878 from the Third Presbyterian society; but the property was sold in 1885, and the building of the large house on Adams street and Winchester avenue commenced.

After the schism, Christian church No. 2 built a house on the northwest corner of Twenty-fifth and Indiana avenue; after the second schism, 1878, the third party erected a house on Prairie avenue and Thirtieth street, which subsequently became the principal house of worship and remained so until the fourth disagreement in 1883. The society appears to have confined itself to dealings in old Protestant Episcopal buildings and in the erection of little houses suitable to changeable religious moods and financial conditions. The members did not once dream of such a thing as ecclesiastical architecture.

The Jefferson Park Presbyterian society cast aside their little frame building on the northeast corner of Adams and Throop streets in 1877, when their \$4,500 brick house of worship was completed.

The Atlas building, on the northwest corner of Wabash and Randolph, was erected that year, Philadelphia pressed brick and other ornamental material distinguishing it from the older Grocers' block. The latter was one of the first houses erected after the fire, and was the pioneer of the immense wholesale buildings of that section. The Atlas was the harbinger of the avenue's latter day business palaces and of brighter days for the whole city, for when

that structure was begun it required faith in Chicago and great commercial courage to expend moneys on building even within the business center. In February, 1890, the Atlas was sold to satisfy a judgment in favor of Thomas Brown. It was bought by Erskine M. Phelps, for \$75,000, which covered the judgment amounting to \$71,000. The property fronts 169 feet on Wabash avenue, and 140 feet on Randolph street, and is worth fully \$400,000. The purchase by Mr. Phelps was made in the interest of J. W. Doane, the owner and present occupant of the block. There has been much litigation over this property, and its history is a complicated one.

The English Protestant Episcopal society (known as the Church of the Atonement and later as the Cathedral of SS. Peter and Paul), built a small house for worship in 1854 at the corner of Washington and Peoria streets. In April, 1861, this society transferred the property to the bishop and in 1866 an old building was purchased from the Presbyterians which was moved to a point near the northeast corner of Robey and Washington streets, where it was burned in 1868. In June, of 1868, the erection of a new house was commenced. That year witnessed its completion. In 1873 this society was merged with St. John's society into St. Andrew's church, and in 1883 the Atonement building was remodeled and a stone basement constructed, the improvements costing \$9,000. The Church of the Ascension erected a frame house on Oak street east of Wells street in 1858, which was moved in 1864 to the corner of Maple street and La Salle avenue, and in 1867 removed to the corner of Elin and La Salle avenue, where it was burned. A new house was built in 1874, and in 1880-82 the walls of a large church were constructed. Calvary church, on Warren and Western avenues, as built in 1867, was a small frame house until 1872, when it was enlarged. Ten years after, it was remodeled and enlarged.

The Portland block of 1876, designed by W. L. B. Jenney, was the first brick-facade venture in Chicago. That is, it was the first large office building of architectural pretensions in the central business district where pressed brick took the place of planed stone or cut stone.

The Windett building, which occupied the site of the new Masonic Temple, was erected after the fire in the Renaissance style. The owner mortgaged this property to the Connecticut Mutual Life Insurance Company at the time of building. The insurance company, through the United States court, foreclosed the mortgage and secured possession of the property. Later the company sold it to the West Division Street Railway Company, which company leased it to the Chicago City Railway Company. Windett brought suit in the circuit court of Cook county to redeem this property, claiming that the insurance company had not properly advertised the foreclosure sale, and also that said company had agreed to extend the time at a reduced rate of interest. The circuit court decided against Windett, and he appealed to the appellate court. Again he lost his case, and then he took it up to the State supreme court, and on October 31, 1889, that tribunal filed an opinion confirming the decision of the lower courts. The suit of Frank Ray for the specific carrying out of the contract to sell the property to him, made by C. T. Yerkes, ensued, and ultimately it became the property of the

Masonic Temple association. In 1891 the work of constructing the Temple was entered upon, as related in the pages devoted to modern buildings.

The Boylston building, on Dearborn street, which fronted on heaps of debris and boxes until the opening of Dearborn street in 1884, was remodeled in 1889-90, and transformed into a good office building. Although marble wainscoting and floors are confined to the main hall and toilet rooms, the workers in oak have compensated in a great measure for the absence of a more popular decorative material. When this large house was erected far south of the business center, the owners never dreamt of the passenger elevator and its uniformed conductor, driver and brakeman, but now the whole institution is here. The Dearborn front is in stone and the Third avenue front in brick with stone trimmings. The style is Venetian-Renaissance.

The public halls, blocks and buildings devoted to commercial uses or musical or dramatic purposes in 1879 are named in the following list:

Abbey, 251 and 253 Wabash avenue; Abbott, 23 to 27 Lake street; Academy of Music, 83 South Halsted street; Accordia hall, 112 and 114 Randolph street; Adams, 358 and 360 Wabash avenue; Agricultural Insurance Company, 544 West Madison street; American Express, 72 to 78 Monroe street; Andrews, 153 and 155 La Salle street; Appleby, Monroe street between Fifth avenue and La Salle street; Arbeiter hall, 368 Twelfth street; Arcade, 156 to 164 Clark street; Arthur, 2131 Wabash avenue; Ashland, 53 to 65 Clark street; Athenæum, 48 to 54 Dearborn street; Atlas block, 45 to 61 Wabash avenue; Attrition mills building, 300 and 302 Clark street; Aurora Turner hall, Huron street and Milwaukee avenue; Avenue hall, 159 Twenty-second street; Ayer's building, 166 to 172 State street.

Batchelder's building, Clark street, southeast corner Randolph street; Beauvillage, 194 Michigan avenue; Bemauer, northwest corner Lake and Clinton streets; Board of Trade, southeast corner Washington and La Salle streets; Boger's, 268 and 270 North Avenue; Bohemian Turner hall, 74 and 76 West Taylor street; Bonfield building, 199 to 203 Randolph street; Boone, 129 to 133 La Salle street; Boyce, ——— State street; Borden, northwest corner Randolph and Dearborn streets; Brand's hall, 160 to 170 North Clark street; Brinkworth's, 73 Monroe street; Bryan, 160 to 174 La Salle street; Bryant block, 89 Randolph street.

Caledonia building, 167 Washington; Castle's block and hall, 615 to 625 W. Lake; Central hall, 2139 Wabash avenue; Central Manufacturing block, 74 to 78 Market; Central Union block, Market, northwest corner Madison; Chamber of Commerce, Washington, southeast corner La Salle; City National bank building, 156 Washington; City hall, Adams corner La Salle; Cobb's building, 120 to 128 Dearborn; Cole's block, 186 to 196 W. Madison; Corigan's block, 395 to 399 State; Corinthian hall, 187 Kinzie; Cornell block, 10 to 16 N. Canal; County building, Clark, corner Washington; Covenant hall, 36 La Salle; Crilly & Blair building, 163 to 169 Dearborn; Criminal court building, Michigan, corner Dearborn avenue; Criterion theatre, 274 Sedgwick; Cunningham building, 116 and 118 Fifth avenue; Customhouse, Clark, corner Adams.

Davison block, 147 to 153 Fifth avenue; Dearborn building, 130 and 132 Dearborn; Dearborn block, Randolph, northwest corner Michigan avenue; De Wald's hall, 334 North avenue; Dickey building, 34 to 46 Dearborn; Dore block, State, northwest corner Madison; Douglas hall, South Park avenue, southeast corner Twenty-seventh; Drake block, Wabash avenue, southeast corner Washington.

Eagle Works block, Clinton, southeast corner Washington; Economy block, 191 to 209 Dearborn; Empire block, 128 and 130 La Salle; Ewing block, 20 to 38 N. Clark; Excelsior hall, 13 S. Halsted; Exchange building, 116 Washington; Exchange building, Union Stock Yards; Exposition building, Michigan avenue and Monroe.

Fairbank hall, third floor, 69 State; Farwell building, Arcade court, rear 159 La Salle; Farwell hall, 148 Madison; Finucan's hall, 2901 Archer avenue; Folz's hall, 267 and 269 North avenue; Foote block, Clark, southwest corner Monroe; Forbes block, 193 Washington; Ford's hall, 44 to 50 W. Van Buren; Fuller block, 148 to 156 Dearborn; Fullerton block, 90 to 96 Dearborn.

Gazzolo building, 82 and 84 W. Madison; Gardner building, 164 and 166 Washington; German Methodist Episcopal church block, 98 to 102 Van Buren; Germania hall, 62 N. Clark; Glickauf block, 81 and 83 N. Clark; Goggin & Schaffner's building, 205 and 207 State; Grand Army hall, 167 Washington; Grand opera house, 87 Clark; Grannis block, 111 to 117 Dearborn; Greenebaum building, 72 to 82 Fifth avenue; Grocer's block, 29 to 43 Wabash avenue; Grund block, 1903 to 1911 State.

Hale building, State, southeast corner Washington; Halsted Street Methodist Episcopal church block, 778 S. Halsted; Halsted Street opera house, 255 S. Halsted; Harrison Court building, 264 and 268 S. Halsted; Hartford building, 49 La Salle; Haverly's theatre, 104 to 110 Monroe; Hawley building, 134 to 146 Dearborn; Healey hall, 2700 Archer avenue; Hemlock building, Michigan, southeast corner North La Salle; Henning & Speed block, 121 to 127 Dearborn; Herrick block, Wabash avenue, southeast corner Madison; Hershey Music hall, 83 Madison; Hoerber's hall, 220 to 224 W. Twelfth; Holt building, 165 Washington; Honore building, 194 to 210 Dearborn; Hooley's theatre, 149 Randolph; Hough's block, Wabash avenue, northeast corner Harrison; Howland block, 174 to 192 Dearborn; Hyman building, 142 to 152 South Water.

Independence hall, 180 Twenty-second; Ingals' building, 190 and 192 Clark.

Journal building, 159 and 161 Dearborn.

Kedzie's building, 120 and 122 Randolph; Kendall block, 104 to 110 Dearborn; Kent building, 151 and 153 Monroe; Kentucky block, 195 to 203 Clark (Quincy); Kingsbury block, 113 and 115 Randolph.

Lakeside building, Clark, southwest corner Adams; Lancaster block, Van Buren, southeast corner Third avenue; Landmark hall, Cottage Grove avenue, corner Thirty-seventh; Larsen block, 719 to 723 W. Lake; Leander Reed building, 79 to 85 Wabash avenue; Leonard's building, 996 and 998 W. Madison; Lill's block, 613 to 617 W. Lake; Liud block, Randolph, northwest corner Market; Loomis building, 2 to 6 Clark; Lumber Exchange,

South Water, northwest corner Franklin; Lumberman's Exchange, 238 South Water; Lyceum theatre, 54 S. Desplaines.

Madison block, 230 to 238 W. Madison; Major block, 139 to 151 La Salle; Malcolm building, 175 to 179 N. Clark; Marine building, 152 to 158 Lake; Maskell hall, 173 S. Desplaines; Mason block, 92 and 94 Washington; Matthei building, 246 and 248 S. Halsted; McCormick block, 67 to 73 Dearborn; McCormick Music hall, 40 to 48 N. Clark; McDonald's block, 947 to 955 W. Madison; McNeil building, 128 and 130 Clark; McVicker's theatre building, 78 to 84 Madison; Mendel block, 127 to 133 Van Buren; Mercantile building, 112 to 118 La Salle; Merchant's building, La Salle, northwest corner Washington; Meridian hall, 97 and 99 W. Randolph; Methodist church block, Clark, southeast corner Washington; Metropolitan block, 159 to 165 Randolph; Miller & Fry building, 84 and 86 La Salle; Morrison building, Clark, northeast corner Madison; Morrison block, Clark, southeast corner Madison; Mueller's hall, 356 to 364 North avenue.

National Life Insurance building, 159 and 167 La Salle; National theatre, 26 Clybourne avenue; Nevada block, Franklin, southwest corner Washington; Nixon building, 169 to 175 La Salle; Norton's block, 220 to 236 W. Washington.

Odd Fellows' hall, 406 and 408 Milwaukee avenue; Ogden building, Clark, southwest corner Lake; Old City hotel block, 39 to 45 State; Olympic theatre, 49 Clark; O'Neill block and hall, 679 and 681 W. Lake; O'Neill's building, State, northeast corner Harrison; Ontario building, North State, southwest corner Ontario; Oriental building and hall, 122 La Salle; Orpheus hall, 239 and 241 W. Lake; Otis building, Madison, southwest corner State; Otis block, 138 to 158 La Salle; Owsley's block, 785 to 789 W. Madison.

Pacific block, 281 to 289 Clark; Parker building, 95 and 97 Washington; Pierce block, 250 and 252 Wabash avenue; Pleiades hall, 220 S. Halsted; Portland block, 103 to 109 Dearborn; Postoffice, Clark, southeast corner Adams; Purington building, 298 to 304 Wabash avenue.

Rawson building, 149 and 151 State; Reaper block, Clark, northeast corner Washington; Rigdon block, 3015 to 3033 Cottage Grove avenue; Robbins' buildings, 204 to 232 S. Halsted.

Saint Albans block, 291 to 297 Wabash avenue; St. Mary's block, Madison, southwest corner Wabash avenue; Saint James block, 406 to 414 Clark; Saint Peter's hall, 328 and 330 State; Sack's hall, W. Twentieth, corner Brown; Schimmel's block, 47 to 53 S. Desplaines; Schloesser block, 200 to 210 La Salle; Schlotthauer's hall, 328 Sedgwick; Schnaitmann's hall, 634 Larrabee; Sharpshooter's hall, North Clark, corner Illinois; Shepherd building, Madison, between La Salle and Fifth avenue; Shreve block, 91 and 93 Washington; Slosson block, Randolph, between Franklin and Fifth avenue; Springer building, State, southwest corner Randolph; Staats Zeitung building, Fifth avenue, northeast corner Washington; Standard hall, Michigan avenue, corner Thirteenth; Stewart building, State, northwest corner Washington; Stone's building, 144 and 146 Madison; Superior block, 75 to 79 Clark; Sutton block, 737 to 745 W. Madison; Svea hall, Chicago avenue, northeast corner Larrabee; Syracuse block, 171 and 173 Randolph.

Taylor building, 140 to 146 Monroe; Teutonia building, Fifth avenue, northeast corner Washington; Thatcher building, Wabash avenue, between Madison and Washington; the Walton, 307 N. Clark, southwest corner Locust; Thompson block, 229 to 247 W. Madison; Times building, Washington, northwest corner Fifth avenue; Tribune building, Dearborn, southeast corner Madison; Turner hall, 257 N. Clark; Turner hall, 251 to 255 W. Twelfth; Tuthill King building, Washington, northwest corner Dearborn.

Uhlich block, 19 to 37 N. Clark; Union building, 100 to 110 La Salle; Union hall, 181 Clark; Union hall, 3607 to 3611 S. Halsted; Union Park hall, 517 W. Madison; Unity building, 75 to 81 Dearborn; United States Express Company's building, 87 and 89 Washington.

Van Buren block, 41 to 67 W. Van Buren; Vermont block, 155 and 157 Fifth avenue.

Wadsworth building, 175 to 181 Madison; Wallace block, 182 and 184 Wabash avenue; Walther's hall, 3932 State; Washington block, 104 to 110 Fifth avenue; Washingtonian home building, 566 to 572 W. Madison; West End opera house, 431 and 434 W. Madison; Westphal's hall, 691 and 693 S. Halsted; Williams building, 85 and 87 Dearborn; Williams building, 164 to 176 Wabash avenue; Williams building, Monroe, southwest corner Fifth avenue; Wilmarth building, 390 to 396 Wabash avenue; Windett block, State, northeast corner Randolph; Workingmen's halls, 368 W. Twelfth, 54 W. Lake and 192 Washington.

Yates building, W. Randolph, southwest corner Canal; Yates building, Randolph, southwest corner La Salle.

The great majority of the buildings named presented the French Renaissance in their ornamental details. France has dominated art for centuries. In 1665 Christopher Wren arrived in Paris *en route* to Italy and Greece. The building of the Louvre was in progress and he saw so much that was grand he concluded that nothing greater could be studied. The Italy of Michel Angelo and Raphael held dominion before her and instructed the world of their time in art and architecture. Even the Flanders of Rubens and Van Dycke swayed the world of art, in a measure, before the great French school was established, and time may prove that true art has returned to Italy and Flanders in its mysterious march. To-day the artists of Milan and Venice and Florence and Rome herself, are competing with the French masters. Belgium presents vast pretensions and the modern United States, the synonym of progress, is putting forth a strong effort to enter the lists. As imitators of the French they could not succeed and the knowledge of this fact drove them, or is fast driving them, to originality in design. The twentieth century will bear witness to the repetitions of history. While the studied memories of France of the eighteenth century can never be removed, neither can they be imitated without damage to their originality and beauty. The older Roman and Belgium schools must be reproduced and new schools established in the cities now rising above the barbaric commercial state, and for none may greater hope be entertained than for Chicago, undiscovered when art was old in Europe.

CHAPTER VI.



COMMERCIAL ARCHITECTURE.

IN December, 1879, a modern building was completed on State street which pointed out at once a change in style and the return of good times after six years of depression. It outlines, in a measure, the utilitarian ideas which architects were forced to follow within a short time and forms the link or divide between the columnated or pilastered stone fronts of former years and the gigantic brick fronts of later days. It is the Central Music hall.

The decade ending in December, 1879, was ushered in by the dedication of a temple to music, and made its exit amid that veritable storm of pageantry and song which characterized the dedication of the Auditorium to music and the drama. It marks a distinct period in the history of the city's architecture; one in which the leading thought of capitalist, engineer, architect, decorator, artisan and material man, combined to build a city above the gardens and ruins of the village. The history of the greater buildings, erected within the decade, tells the success of labor directed by this thought, even as that of the larger houses constructed within the last two years, speaks of the development of this success.

The Federal, the County and the City buildings were not yet complete, nor was the Board of Trade building commenced. Chicago was still a great village. A city was actually raised out of the southern swamp in 1881-2, when Pullman became one of the world's wonders and houses began to give life to marsh and prairie.

The Commercial style is the title suggested by the great office and mercantile buildings now found here. The requirements of commerce and the business principles of real estate owners called this style into life. Light, space, air and strength were demanded by such requirements and principles as the first objects and exterior ornamentation as the second. Thus, severity in many buildings, ornamentation in a few and massiveness in all, portrayed the varied ideas of owners in art matters, as well as their determination to build strong and large. The title, Commercial style, applies to the Montauk block of 1882, as well as to the Masonic Temple of 1891, and may be said to embrace, generally, all modern houses over seven stories in height. Let a few of the leading blocks of Commercial architecture be mentioned. The Masonic Temple shows a height of 290 feet from the first floor to skylight, 247 feet from sidewalk to coping, and contains 600 rooms; the Fair is 241 feet to coping; the

Womans' Temple, 196½ feet to coping, 266 feet to spire, and contains 300 rooms; the Auditorium is 265 feet to lantern; the Owings, 217 feet to gable; the Grand Central depot, 221½ feet to top of tower; the Abstract & Trust Companies building, 210 feet, contains 200 rooms, the New Ashland, 210 feet, contains 300 rooms; the Manhattan, 204 feet to coping, contains 400 rooms; the Monadnock, 204 feet to coping, contains 550 rooms; Henning & Speed's (south Clark street) building, 192 feet; the Unity, about the same height, containing 300 rooms; the remodeled Chamber of Commerce, 198 feet, contains 900 rooms; the Home Insurance, 178¾ feet; the Tacoma, 175; the Chicago, 174 feet; the Pullman, 165 feet; the Rookery, 164¾ feet; the Rand-McNally, 148 feet; the Royal Insurance, 145 feet; the Chicago opera house, 135 feet, and the Leiter, on State street, 133¾ feet. The Bartlett, south of the Boylston, the new German theater, and the new Oriental, all planned in 1891, are to be fourteen-story houses of from 200 to 250 rooms. The McCormick, on the southeast corner of Dearborn and Randolph streets; the new Unity, and the Columbia Vault Companies building are sixteen-story structures. They are not all the modern Commercial structures by any means; for the eight, nine and ten-story buildings outnumber them, while retaining the same general characteristics.

The new style was outlined in the Portland of 1876, when pressed brick piers, with numerous large windows, took the place of pilasters or pillars, with recessed Italian windows. It was a surprise, indeed, when that building was completed. It won popularity at once as an office building, but the attachments formed for the Renaissance militated against its duplication for six years. It stood a lone modern brick on Dearborn street until 1882, when enterprise seized hold of the idea and constructed the Montauk. In the interim, the passenger elevator was perfected, and new ideas of construction were inculcated, so that the venture of 1882 was really removed from the realms of venture in all things, by the success of the Portland, and it was proven that an office building, erected to suit modern notions, thoroughly equipped with modern appliances, would fill up with modern tenants, leaving the old and unremodeled houses to the conservative fog.

The part played by the elevator in this Chicago Renaissance is scarcely appreciated. The owner, of course, realizes that there would be little use for a high building without it, and the architect arrived slowly at the same conclusion. The latter studied the means for building high on the compressible soil of Chicago—the former studied the means of filling a high building with paying tenantry. Between them, the elevator and the system of Chicago construction was perfected, and each was satisfied. Without the two systems—interior transportation and this construction—the great high buildings of the present could never be rendered what they are. Let this be illustrated. Under the system of Chicago construction, or any other system here, the limit in height is the limit of the carrying capacity of the clay upon which the foundations rest. Now, the carrying capacity of Chicago clay scarcely exceeds three thousand pounds per square foot of ground; and as brick or stone is almost three times as heavy as the modern steel and hollow-tile construction, it follows that an eighteen-story house may be erected where a six-story one would be the rule in brick or stone. To make

this plainer, take the steel chimney of the new Fair block. It is two hundred and fifty feet above the sidewalk, nine feet, five inches in diameter, and about two hundred and fifty tons in weight. A brick chimney, of the same height and capacity, would weigh about seven hundred tons, occupy almost double the space and cost about forty per cent more. Thus the advantages of the new system were embraced, and, the elevator being an accomplished fact, it remained for owners to conceive high houses, for architects to design them and for engineers to construct them.

Since 1882 the system has gradually developed, until its limits point out immeasurable possibilities. Rendering the steel and burnt clays lighter, and at the same time stronger, must be considered as a high regulator, while the work of the engineers, providing for the application of still lighter material to higher buildings, may lead to tower houses of steel, sheathed with brick or terra cotta, carried up to Eiffel heights.

The cantilever system, first applied in the Rand-McNally building, was made necessary by the proximity of the Insurance Exchange, through the heavy foundations of which it was inexpedient to cut. Beds of concrete and iron were placed near the foundation of the heavy Exchange building and on each bed a massive steel pillar was placed. Steel girders of immense carrying capacity, were placed on the columns. Each one overhangs the foundation on the side next to the neighboring building, and this overhanging end represents a short arm of the lever completing the system to the first floor level, above which the ordinary Chicago construction system is carried out in steel and burnt clay. In the building of the Chemical bank block a similar plan had to be followed. It is quite as reliable and more economical than columnated or pier foundation work. The fastening of beams and girders by bolts and nuts was observed here until a new and better system was evolved for the construction of the Tacoma. In this building all fastenings are made by means of rivets, heated in a portable forge and hammered while red. The object of this system was to guard against loosening, as nuts and bolts are liable to loosen, and to insure rigid construction.

As has been stated the possibilities of the system are immeasurable. It may revel in the Renaissance, boast of the majesty of the Romanesque, or dwell with the ascetic in the monastic Gothic. Examples of what may be done with it under architectural inspiration are living in this city. It is seen rioting in the Rookery, taking on a perfect dress in the Woman's Temple, and thoroughly puritanical in the Monadnock-Kearsage. Its empire is the air. Creeping heavenward, it seems to reach beyond the smoke and noise of the city and beg for a place above the clouds. Comfort, cleanliness and light are within it. Without, its bays and oriels attract every straggling sunbeam, sending it below to brighten the streets or to cast light into the windows of its humble neighbors. The summer breezes, from the lake and prairies, it scatters with lavish hand, and when the icy winds from the bleak Canadian northwest beat down upon the city, it checks their barbarous career, breaks them in fragments, and offers to the pieces warmth and cheer. The time will come when its walls will carry more ornament than at present, and the Chateau of the Loire of pre-Gothic days will be represented here by towering commercial structures, perfect in æsthetic principles, to endure as long as Chicago endures.



HONORÉ BUILDING.

SAN MICHELE'S RENAISSANCE.

VENETIAN ORNAMENT.

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Before the close of 1885 an impression was made by the modernizer, and there were found, scattered round, a number of large houses, varying, within and without, from anything seen here prior to December, 1879. The elevator and the new system of Chicago construction were playing leading parts with the architect, the decorator and the remodeler in the drama and a half decade witnessed extraordinary works, a revolution in the building arts. The great majority of the buildings named in the last chapter were here at the close of 1885, and in addition were those named in the following list:

Board of Trade, Jackson street.	Gaff, La Salle street.
Binz's hall, 786 W. Lake street.	Hampshire block, southeast corner La Salle and Monroe streets.
Brother Jonathan, Sherman street.	Hansen building, 116 and 118 Dearborn street.
Calumet, 187-191 Lake street.	Haverly's theater, Monroe street.
Carpenters' hall, 221 W. Madison street.	Hoerber's hall, 220-224 W. Twelfth street.
Chicago opera house, southwest corner Washington and Clark streets.	Jarvis', 124 Clark street.
Courthouse and City hall.	Kastner's hall, 3001 Archer avenue.
Commercial National bank, southeast corner Monroe and Dearborn streets.	Klare's hall, 72 N. Clark street. ✓
Central Music hall, southeast corner State and Randolph streets.	Maller's, 226 and 228 La Salle street.
Counselman building, northwest corner La Salle and Jackson streets.	Masury's, Michigan avenue.
Ely building, southwest corner Wabash avenue and Monroe street.	Montauk, 111-117 Monroe street.
Fitzgerald's hall, Halsted and Adams streets.	Open Board of Trade, Pacific avenue, near Jackson.
Franchere's hall, 188 Blue Island avenue.	Power's building, Michigan avenue.
Fry building, 84 and 86 La Salle street.	Parker block, 6 and 8 Sherman street.
First National bank, Dearborn and Monroe streets.	Royal Insurance, Jackson street.
	Sibley building, 200-206 Randolph street.
	Pullman building, Adams street and Michigan avenue.

South State street, Halsted, Madison, Wentworth avenue, Milwaukee avenue and North Clark street, outside the business center, witnessed unusual activity in building, and presented, in 1885, numbers of substantial blocks of pressed brick and terra cotta fronts. All round the city the carpenters of the Queen Anne period were busy with saw and hammer, and Chicago was soon raised above its village condition and prepared for the greater building age which began in 1886. Four hundred church buildings speak of the religious earnestness of the people. The Union League clubhouse on Jackson street and Fourth avenue; the Union clubhouse on Dearborn avenue and Washington place; the Calumet clubhouse on Michigan avenue and Twentieth street; the Chicago clubhouse on Monroe street, east of State street; the Farragut Boat clubhouse; the Illinois clubhouse, 154 South Ashland avenue; the Washington Park clubhouse on Sixty-first and South Park avenue and the Sheridan clubhouse on Michigan boulevard are semi-public buildings which tell, in themselves, the history of the social growth of the city.

North, south and west the architecture of dwelling houses bears testimony to the times. Along the southern boulevards particularly, the idea that the home has assumed the forms of stability is well exemplified. Chateaux of the twelfth century appear in line with the modern Romanesque and Gothic residence, and even the grim Colonial, telling of exclusiveness and cupidity, find a place on those magnificent thoroughfares.

The store and flat buildings have cast aside their fragile, humble appearance and now are dressed in pressed brick and terra cotta; while the great suburban hotels with verandahs or balconies and their sister buildings, the Chicago apartment houses, have come to stay.

The Central Music Hall Company was chartered in 1879, with a capital stock of \$180,000. John M. Clark was president, Martin A. Ryerson, vice president, and Lucy A. Carpenter, secretary and manager. Unlike the leasing syndicates of later days, this company is owner of land and building and the earner of rich dividends. It was completed in December, 1879, at a cost of \$215,000, after plans by Adler & Sullivan. The ground area is 125x151 feet, and above this rise seven stories of dressed Lemont stone. The portico shows two massive Corinthian columns of polished red granite, but outside of this feature the style is simple. In the interior arrangement the economy of architecture is made apparent, for the auditorium or music hall is 83x125, the Apollo hall one-fourth that area, the twelve store-rooms, on the first floor, large and lightsome, and the seventy office rooms, airy and well arranged.

The buildings of Pullman were designed by S. S. Beman and built according to his plans. The surveys were made in 1879 and early in 1880, and on May 26 of the latter year the work of excavation for the foundations was begun. The site was a waste of marsh and lake even on January 1, 1880. It was a town one year from that date, and the first family had actually settled in a modern brick dwelling. April 2, 1881, the great machinery hall and the workshops were inaugurated, and an industrial community ushered into existence. The water tower rises to a height of 195 feet from a square base of 70 feet, covering an area of 4,900 square feet. For 100 feet of its height this quadrangular form is observed, when it merges into an octagon, tapering sparingly toward the finial. In the basement of the tower is the pumping machinery, which raises the water to the great tank in the tenth story. This tank is thirty feet high by fifty-six feet in diameter, and has a capacity of 500,000 gallons. Below the machinery room is a reservoir, 70x30 feet, which receives the sewage, but not the drainage, of the city and from which it is pumped to the sewage farm, three miles away. The tower and its interior present a few architectural and many engineering points. It is part of the heart of Pullman—the circulatory organ of the town. The engine house with its powerful habitant, the Corliss engine, the Allen Paper Car Wheel works, the Pullman Company's shops, the hotel Florence, the Arcade, the public schoolhouse, the Union church building, the new Catholic church and the railroad depot, all present architectural features, while the 1,600 pressed-brick, stone-trimmed and slated homes of the people speak of order in everything, leaving a citizen to regret that the members of the Pullman Company and their architect did not settle here in 1855 and teach the older village, on the Chicago river, how to build a town.

The Masury six-story building, at 190 and 192 Michigan avenue, partakes in a measure of the character of the great modern office buildings, but is wanting in their size and ruggedness. It was the first large business house erected on Michigan avenue after the panic and was completed in 1881. Its three grand oriels, springing from corbels, which rest on the

pillar dividing the large windows of the second floor into two divisions, rise from the level of the third floor and receive a cone-like roof above the parapet. A pavilion and dormer with gallery above give point to the main recessed section, and with the double, straight and pointed windows and balconettes of recesses and bays give an Italian-Gothic ensemble worth imitating, while the rectangular windows, between the cornice brackets in the attic story tell of the possibilities of such a style.

Haverly's, or the Columbia theatre, was begun June 12, 1881, and completed September 12, that year, at a cost of \$150,000. Oscar Cobb was architect; James D. Carson, superintendent, and Joseph Downey, builder. The despatch with which this house was carried up was so remarkable that experienced builders and architects came from all quarters to examine the great creation of eighty-three days. The front presents some of the older features of Chicago architecture in a new dress. The canopy, carried on chaste pillars to the base of the third story, the hallway and ornamental window glass relieve the plainness of the first story or ground floor front. As improved in 1884, the interior presents marked decorative features. The old postoffice building, restored after the fire for theatrical purposes, and named the Adelphi, was known as Haverly's theatre until 1881, when it was torn down to make way for the First National bank. So far a beginning was made. The change won recognition gradually. Let this be proven! The dreams of 1881 became realities in 1882. No less than 3,113 buildings were erected. Among the business blocks completed or nearing completion at the close of that year the following may be mentioned:

The Montauk block, ten stories high, 70x90 feet, cost \$220,000. The Mortimer, Tapper & Grannis building, 90x50 feet, ten stories high, at Nos. 187 to 191 La Salle street, cost \$140,000. The Ryerson block, northeast corner of Wabash avenue and Adams street, 116x172 feet, six stories and basement, entirely fireproof, with internal construction of iron, cost about \$200,000. The Ryerson building, No. 134 Wabash avenue, 58x160 feet, five stories, iron interior, cost \$100,000. A six-story office building by A. J. Averill, 40x109 feet, at Nos. 239 and 241 Wabash avenue, cost \$70,000. A five-story basement and warehouse by George Watson, corner of La Salle and Kinzie streets, 100x175 feet, cost \$85,000. The J. C. & S. D. Hammond, five-story office building, La Salle street, cost \$45,000. J. L. High's building, for offices, 25x100 feet, on Adams street, near Dearborn, south front, cost \$35,000. A five-story store, 26x170 feet, at No. 205 Madison street, cost \$40,000. Farwell building, by J. V. and C. B. Farwell, west side of Market street, from Monroe to Adams street, 397x255 feet, six stories, basement, and sub-basement, cost \$700,000; rented at \$144,000 per year. Jewett block, by Samuel J. Jewett, northeast corner Market and Monroe streets, 97x263 feet, six stories and basement, cost \$220,000. Robert Law's building, adjoining the above on the north, six stories and basement, 100x150 feet, cost \$105,000. The H. Corwith building, next adjoining and of same dimensions and height, cost, \$120,000. The Sheppard block, on the southeast corner of Adams and Market streets, 73x80 feet, six floors, cost \$75,000; also five-story store building, 50x73 feet, Nos. 199 and 201 Fifth avenue, by the same owner, cost \$80,000. The H. C. Durand, six-story warehouse, 50x81 feet, on Jackson

street, near the corner of Market, cost \$50,000. The office building for the use of the Chicago, Burlington & Quincy Railroad Company, on the northeast corner of Adams and Franklin streets, 124x181 feet, and six stories high completed at a cost of \$350,000. The First National bank building, northwest corner of Monroe and Dearborn streets, completed at a cost of \$500,000. The beginnings of the new Board of Trade building must be credited to this year. Among other of the most important structures erected during the year were: The Union clubhouse, corner of Dearborn avenue and Washington place, fronting on Washington park. This structure is 80 feet square, built in rock-faced brown stone, at a cost of \$100,000. A five-story elevator, built by the Chicago, Rock Island & Pacific Railway Company, on the river at Twelfth street, cost \$100,000. The Seaverns buildings, stores and flats, on State and Twenty-second streets and Wabash avenue, total cost, \$250,000. The Rosenfeldt building, 90x150 feet, four and five stories, on the southeast corner of Washington boulevard and Halsted street, cost \$140,000. The College of Physicians and Surgeons, corner of Harrison and Wood streets, five stories, stone front, cost \$70,000. Fish & Wheeler's factory, corner of Polk street and Third avenue, five stories, cost \$60,000. John Borden, a four-story business building, 80x105 feet, at Nos. 208 to 214 Randolph street, cost \$60,000. A. M. Billings' gas-works, corner of Division street and Elston avenue, cost \$600,000. A row of three-story stores and flats, corner of West Madison and Loomis streets, cost \$100,000. Bemis & McAvoy, six-story brewery, 60x138 feet, on South Park avenue, near Twenty-fourth street, cost \$90,000. The Academy of Fine Arts, Van Buren, near Michigan avenue, three stories, cost \$10,000. Bullock Bros.' Manufacturing Company, Tolman avenue, near Lake street, group of buildings for electric machinery manufacturing, cost \$250,000. Billiard-table factory for J. M. Brunswick & Balke Company, buildings occupying block, front on Superior street, corner of Market street, one 60x200 feet and one 60x100, each six stories, cost \$80,000. Douglas Park pavilion, in Douglas park, facing Ogden avenue and lake, cost \$12,000. Residence for J. V. Farwell, two-story basement and mansard, 60x70, corner of Pine and Pearson streets, one of the most elegant in the city, cost \$120,000. Flats by L. W. Yaggy, two buildings, corner of Dearborn avenue and Eric street, one six-story and basement and the other two-story and basement, cost \$120,000. Residence for B. P. Moulton, No. 1912 Racine avenue, 45x80 feet, cost \$85,000. P. J. Sextons' four-story dwellings, 162x72 feet, Nos. 341 to 351 Chicago avenue, cost \$55,000. Residence of C. P. Kimball, Ontario street, between Cass and State streets, two-story basement and high roof, cost \$40,000. Residence of Marx Wineman, Michigan avenue, north of Twenty-sixth street, built of granite and finished with great elegance, cost \$60,000. Mansion for Potter Palmer, corner Banks street and lake shore drive, 80x100 feet, three stories and basement, with tower twenty-three feet square and five stories high, one of the finest of the north side mansions, cost \$200,000. Block of three houses for H. H. Shufeldt, William C. Egan and Eugene Egan, corner of Dearborn and North avenues, fronting on Lincoln park, cost \$120,000. A house for A. Byram, corner of Michigan boulevard and Twenty-ninth street, cost \$75,000, and opposite is the residence of Sidney Kent, a house in French Renaissance, time of Francis I., showing elaborate architecture throughout, cost \$80,000.

The Montauk building, the pioneer of giant Commercial architecture in Chicago, a nine-story-and-high-basement building, was designed by Burnham & Root. It exerted an immense influence on the building arts, not alone in Chicago, but also throughout the whole Union wherever great building enterprise has been manifested during the last ten years. The whole tendency is Romanesque, more pronounced in the portico, cornice and parapet than in any other feature, if the horizontals, or the bands at floor levels, be excepted. The center of the facade, like each of the recessed or side divisions, is pierced by three segmental windows, the substructure is heavy batter work, but not at all out of proportion, while the whole structure stands out clean and majestic, telling that the venture of 1881-2 is a success in every particular.

The Foss block, on the southeast corner of Madison and Loomis streets, erected in 1882, is a good example of the transition period in the west division. It is the divide between the marble fronts of the previous decade and the massive brick fronts which came after it, of which the Haymarket theatre is a specimen.

The First National bank building is a six-story-and-basement structure, Romanesque in style, with basement and first story in vermiculated stone and the upper stories in pressed brick. A Roman-Doric portico shows two polished granite columns on each side, corresponding with pilasters carrying a heavy entablature and balustrade. In the central and corner pavilions the horizontal style of the recessed sections merges into the vertical. The portico extends to the level of the second principal floor and piers in the corner projections correspond with it, thus carrying the high basement and first floor in one story. The second and third stories are also carried in one by pilasters, and the fourth, fifth and sixth are compressed into one story for architectural effect, the two windows of the sixth story in each corner pavilion and the three in the central pavilion, showing the round arch, finishing a section. The cornice is becoming, and the parapets above it, in the pavilions, render the sky-line perfect. This house occupies the site of the "Honest building" which was restored after the fire and used up to 1882, when it was torn down. The banking hall, occupying the first floor, is lighted by a great court. While the mural decorations and furniture are of the highest class, they are lost in the business air which pervades this hall, so that to pick them out one must visit the bank with that sole object.

The Calumet, a Romanesque block, was the first high office building in the new Board of Trade district and the second in the city, dating back to 1882-3. During its construction citizens walked deliberately to have a look at the storied mass of St. Louis, dark red, pressed brick, and old codgers chuckled at the idea of the Montauk being duplicated. When they dwelt on the fact that New York men came hither to build such high houses they concluded that "there must be something in Chicago" and convinced themselves that the city was still growing. A few years later they half conceived the idea that the city was in its infancy, but to-day the cautious old fellows laugh and chuckle again and tell you without blushing that the town is only beginning to grow. The old Calumet (for it is old in comparison with its juvenile neighbors) shows very visibly the wear and tear of eight years, and, to look at it in

damp weather, one would think it weeping for those olden days when it caught every breeze and looked down proudly on its lowly surroundings, or with jealousy at its eastern neighbor, the Montauk. It is yet high, for additional stories have been added, and years must pass by before this one pioneer of "sky-scrapers" will surrender an iota of its prestige. The entrance to the Calumet building shows the introduction of metallic wainscoting into Chicago buildings. The owners, Grannis, Mortimer & Tapper, saw in this material a decorative feature better suited to such large Romanesque buildings than ornamental tile. It is also the first building in the world where fire clay tile was used for ceilings and hollow tile for partitions. One wall of such tile, eighteen feet long and one hundred and thirty feet high, is built without extraneous supports.

The Chicago, Burlington & Quincy office, six-story-and-basement-building on Adams and Franklin streets, was designed by Burnham & Root early in 1882, who adopted the Florentine-Romanesque style, showing high ornamental parapet over central projection, with latter-day details. St. Louis pressed brick, with terra cotta frieze cornice and floor-level moldings rise above the first story of bush-hammered Bedford stone. The window openings show heavy, molded jambs. The central court, covered with a Hayes skylight, is 55x75 feet clear. Around this court are galleries, corresponding with the levels of the second, third, fourth, fifth and sixth floors, supported on tile-encased iron columns. Two stairways and three elevators communicate with the upper floors, while the basement is reached by common stairs. By a system of miniature cornices the second and third floors are blended into one story and this is repeated in the fourth and fifth stories. The richly capped windows of the sixth floor appear in the deep frieze, and their capitals aid in forming the cornice.

The panorama buildings on Wabash avenue, circular or octagonal, are rough monuments to the beginnings of the great scenic paintings of the Philippoteaux. The great canvas, four hundred feet in length by sixty feet in height, required a shelter, and architecture suggested this shelter in the rough forms erected in the beginning of the last decade. The ancient amphitheater, doubtless, suggested the form to the architect; but the platform in the center is a modern idea. The Battle of Gettysburg panorama building on the southwest corner of Wabash avenue and Hubbard court was designed in 1883 by Bauer and Hill, after the style adopted in the building at Paris, and that at New York, erected in 1883. It is one hundred and thirty feet in diameter with sixteen-sided brick walls fifty feet and ten inches in height, carrying a low dome. Iron pillars extend from foundation to roof, showing ribbing spreading out to the open circle in dome above which is the eupola. A ring of glass round the roof lines admits the sunlight. A one-story pavilion contains the vestibule and office. A spiral stairway, in the center of the main building, leads to a platform, one hundred and twenty-six feet in circumference and thirty feet above the floor level, whence the visitor views the representation of the battle. The panorama of the Siege of Paris followed and then that of the Battle of Shiloh.

The skating-rink craze suggested other large buildings, that on State and Twenty-fourth streets, burned early in 1891, being the highest example. It was a wild craze and the

style of buildings, which screened the rollers and held within the noise and dust and noxious air, were crude, suggested by hurry and expediency.

The corner-stone of the present Board of Trade building was placed December 13, 1882. So late as the summer of that year the square fronting the Rock Island railroad depot was filled with brick, rock and other *debris* of the great fire. Portable restaurants were ranged along Clark and Jackson streets, and the whole block presented the forms of ruin and decay. Men wondered why the Grand Pacific hotel authorities or the railroad companies did not convert it into a grass plat, and they were still wondering when the press of the city imparted the grateful news that the Board of Trade had acquired ownership of the north half and a syndicate of the south half of the square eyesore, the object being to cover it over with two gigantic houses. The Board of Trade building fronts one hundred and seventy-three and three-quarters feet on Jackson street and extends south two hundred and twenty-five feet to alley. The front part, about two-thirds of the whole, is one hundred and forty feet high, with central tower and lantern rising to a height of three hundred and three feet. The rear, one hundred and sixty feet in height, is devoted to business offices. The tower, constructed of Fox Island granite, like the whole exterior, rises to a height of two hundred and twenty-five feet, where it forms the base for the lantern and shows the four faces of the great clock. This lantern is constructed of iron and presents artistic work in metal, for seventy-eight feet, never hitherto carried to such great heights in this city. The main entrance shows two heavy square pillars of polished gray granite, resting on heavy pedestals of the same material and bearing an elaborate entablature. This artistic arrangement of polished granite and the figures of commerce and agriculture form part of the tower. The tiles used in the vestibule point out the fact that the beauties of mosaic work were not then so thoroughly understood as at present; but the marble stairways leading to the great hall lead to the conclusion that the construction of such work claimed more care in 1883 than in 1891. The great marble columns in the trading hall and the wealth of ornamental glass in the great transoms afford to members a daily pleasure and to visitors an unusual show of massive art. W. W. Boyington prepared the designs for this American-Gothic building.

Plans for the open Board of Trade building were prepared in the fall of 1883, and in September of that year the work of construction was commenced. The building is 100x105 feet, six stories in height. The boardroom, 80x100 feet in area, with ceiling thirty feet high, is lighted by large front and rear windows and court light. On each of the upper floors are twenty office rooms, averaging 12x22 feet, well lighted, each supplied with vault, and they open on the court, rialto fashion. The fronts of this old settler among the pioneer office buildings are in the regulation style of that period—dark red pressed brick, with terra cotta trimmings. The total cost approximated \$150,000.

The Adams Express building contrasts strangely with the older buildings on the west side of Dearborn street. The front above the first story is carried on four great piers and two great pilasters, which extend from the second story to the first cornice or floor level of the upper story, broken only by the first and second rock-faced band-courses. The great

Romanesque entrance is formed by rock-faced brown stone. In height it equals that of the high basement and first floor. A band marks the extent of the first story, stone piers and lintels. Above this all is brick and terra cotta, with large square openings for the double windows. A balcony extends from pilaster to pilaster, at the level of the fourth floor, and three Norman windows take the place of three double square windows peculiar to the lower stories, in the center, at the eighth story. A molding or stone band marks the level of the ninth story, and above this rise two short pilasters, in graduated brickwork with carved stone capitals, crowning, as it were, the inside piers, while heavy ornamental brackets rise above the great central pilasters and angle brackets above the corner piers. Between these cornice supports are square windows, and above the cornice, a heavy corbel table and a balustrade. It is one of the early buildings, suggested by the Montank block.

The Brother Jonathan building, on the corner of Jackson and Sherman streets, varies from the older designs of J. M. Van Osdel. It is brought nearer the modern commercial form, and, when it receives four additional stories, will be one of the "sky-scrapers" of that region of high buildings. The massive substructure, piers and double windows are interesting.

In April, 1883, the Pullman Palace Car Company commenced work on their building, southwest corner of Michigan avenue and Adams street. The plans, by S. S. Beman, called for a modern house, to cost about \$1,000,000, and that grand, American Norman-Gothic structure was brought into existence. It covers an area of 127x170 feet, is one hundred and sixty-five feet to hip-knob, and is, in every respect, a modern, fireproof, ten-story building, of two grand pavilions, with first and second stories in massive rock faced, Jonesboro or Lowell red granite, and the upper walls in St. Louis, dark red, pressed brick and Chicago terra cotta. The Adams street entrance to this building, a marvel of taste, shows strong architectural features. There is the heavy square pillar and lengthened capital, carrying a superb arch and entablature, all reaching from street level to a point below the level of the fourth floor. The first story, on Adams street, shows a rich arcade of five polished pillars and two rock-faced battered buttresses, west of the entrance, and four polished pillars and two battered buttresses eastward. The same story, on the Michigan avenue front, is all in heavy battered masonry, with recessed windows, and with an entrance arched and imposing in itself, but plain, when compared with its neighbor on Adams street. The Adams street facade is divided by a recessed open court into two great parts. At the level of the fifth story three Marat turrets spring from corbels, and extend above the upper cornice, where they receive a bell roof, while the rounded northeast corner of the building is capped by oil-lettes and a cone roof. The windows of the second and third stories are almost minus decoration, but above this, they are arched or semi-arched and labeled lightly. A great bay is carried above the Michigan avenue entrance to the level of the fifth floor, where the round-arched recessed windows begin. On the ninth floor, the window is square, divided into three parts by brackets, supporting a lintel. Outside each window is a balcony. This system is not confined to the center of the east front, but extends to other parts of that front and to the Adams street facade. Within, the halls or corridors show very fine decorative

work, and it is a question if any building of 1891 surpasses this of 1883-4 in exterior outline or interior arrangement. By the use of hollow tile in the construction of floors and partitions in the covering of iron columns and in the furring of the exterior walls, the building is rendered fireproof. The interior is carried on iron columns, and girders and brick walls are dispensed with. This iron work was produced by the Union Foundry Company and the Pullman Company. The Durham system of drainage and the Bakersmith system of steam heating and pumping were introduced in this building.

In October, 1883, the C. M. Henderson building, on the northeast corner of Market and Adams streets, was designed by Wadskier, and the one-story Schufeldt liquor warehouse, built a few years before over the ruins of the old gas house, was torn down.

The Sibley warehouse, fronting west one hundred and eighty-nine feet on Clark street and south two hundred and forty feet on the river, was designed, in 1883, by George H. Edbrooke. The street front shows six stories, with first and second basements; and the river front eight stories, all in pressed brick with stone trimmings. The gateway to the warehouse and the stone fronts on Clark street, with the broad pilasters, convey to this house a sense of immensity unknown at that period on the north side. The second and third stories of the Clark street front are compressed into one by pilasters carrying arches above the windows of the third story, and this plan is carried out in simpler form in the next two stories. The upper story, or attic, shows groups of Norman windows, with a pilaster in the form of a buttress between each group. Above is the ample cornice and high parapet.

The Jennings block, on West Madison street, was designed by S. S. Beman, and erected in 1884. It is 100x95 feet in area, five stories, attic and basement in height, with hip-roof and pavilion roofs of red slate. St. Louis pressed brick is the material used in construction, with terra cotta and galvanized iron trimmings. The attic story shows grand dormers and frontals, and the whole house partakes of the modern Italian styles. Two great bays, resting on ornamental corbels, occupy the center of the facade in the second and third stories, dressing the building, as it were, in the latest fashion.

In May, 1884, the Commercial National bank building, on the southeast corner of Dearborn and Monroe streets, was completed, after plans by Jaffray & Scott. Mortimer & Tapper were the builders. The basement or first story is constructed of blue Bedford limestone, and the superstructure of St. Louis pressed brick and Perth-Amboy terra cotta. While it presents many Romanesque features, it is too vertical to be classed as wholly Romanesque, while its high attic story and gabled dormers pretend to bring it within the realm of the French school. In fact it belongs to the great school of Chicago's necessities—a roomy, lightsome structure, much fairer within than without. With the cornice and parapet of its giant neighbor to the south, above, the Commercial block loses by contrast much of the strength and beauty which undoubtedly belongs to it. The safe-deposit vaults of the Commercial Safe Deposit Company are built upon a bed of concrete, six feet in depth, laid on the water line. The walls and ceiling are of solid masonry, lined with two layers of railroad iron, which, in turn, is lined with a coat of steel. The vaults of this division of the house, as well as the

sixty-seven vault doors throughout the building, are the work of the Hall and the Diebold Safe and Lock Companies.

The Weber Music hall building, on the southwest corner of Wabash avenue and Jackson street, was completed in 1883, after plans by F. L. Charnley. It is a six-story Anderson pressed brick building, and one of the first to show the possibilities of Wabash avenue so far south, if the buildings of 1872-3 be unconsidered.

The Royal Insurantee building was designed by W. W. Boyington and built by C. and A. Price in the fall of 1883. The work of construction began later that year, and continued without intermission until the fall of 1884. It fronts one hundred feet south on Jackson street, west of La Salle, with rear on Quincy street, thus giving a depth of one hundred and sixty-five feet. It is one hundred and sixty-five feet in height, or nine stories high and basement, with a glass-covered light shaft or court, 30x56 feet. This great dark rose-colored granite-fronted building gives the idea of a mansion of Francis I. time, to which four or five stories have been added. The Quincy street front above the lower story is constructed of Anderson pressed brick, and though plain in comparison with the Jackson street front, is a very creditable piece of work. The basement and first floor fronts show the polished pilaster each side of door and rock-faced piers, while the mezzanine shows two heavy Romanesque windows over the square Wyatt windows of the first floor and a smaller window of the same class in the center with gallery outside over the entablature of the entrance. Above this window, in the center of the third floor, is a balconette carried on a beautiful corbel. Grand pilasters extend from the level of the fourth floor to the first cornice on the level of the ninth, richly capped and showing hanging buttresses on the two central pilasters. The ninth floor shows two triple-arched windows on each side of the center, and the center itself shows square windows in two stories with grand frontal above carrying the British arms in relief with a crown for finial.

The Calumet club building on Michigan avenue and Twentieth street, was completed in March, 1883, at a cost of \$150,000, after designs by Burnham & Root. Anderson red pressed brick in original designs and a judicious use of terra cotta give to this building an appearance hitherto unknown in the city. It is 81x183½ feet, three stories, attic and basement high, or about ninety feet, with balconied oriels, tourette and square tower. It is one of the earliest of the elegant semi-public buildings of the city and the very best of its class. It is an adaptation of the Italian, filled with detail, an extraordinary attempt to group the useful with the ornamental in domestic architecture.

The Dearborn street depot was designed by C. L. W. Eidlitz in French-Gothic style, and built by Joseph Downey in 1883-4 at a cost of \$500,000. J. T. Alton was superintendent for the architect. It is a palace in brick, terra cotta, iron and hard-woods, the first railroad building in the city worthy of its time. The extraordinary, saddle-back-roofed clock tower or campanile is seen at the foot of Dearborn street. The campanile itself is a barbarian-looking structure, pierced with portholes like a keep. The ensemble exemplifies railroad cupidity. The roof gives the idea of the spreading-out process, for, were it widened from the eaves, it might cover territory extending to the building line of State street on one side and that of

Clark street on the other. The portholes must, of course, be intended for Pinkerton's sharpshooters. If the object of the architect were to convey this idea, he is eminently successful; otherwise he is not, for the whole upper section of the tower destroys the symmetry of the lower sections and dwarfs the whole facade. Indeed, it has been stated that this campanile, annoyed at its ultra-uniqueness, threatened to cast itself against Donohue & Henneberry's building—to demolish itself, in fact. The fault of the whole building is its want of height, seven additional stories would render it beautiful and useful. The pressed brick used in general construction were furnished by the Excelsior Company, the molded brick by the Peerless Company, and the enameled brick by the Enameled Brick Company of Philadelphia. The Perth-Amboy Terra Cotta Company, of New York, furnished the ornamental blocks for the exterior decoration and the great mantels in the waiting rooms. Within, the house is perfect for depot purposes. The halls, corridors, waiting rooms and sheds point out the care lavished on the interior. Even the basement is much cleaner and neater than the main floor of old-time depot buildings, so that with all its faults, it must be considered one of the great modern railroad structures of the world. The structure shows a frontage of two hundred and thirteen feet on Polk street, four hundred and forty-six feet on Third avenue, and two hundred feet on Fourth avenue. The main building is forty feet deep and extending south between the side buildings is a train shed six hundred feet in length. This shed is one hundred and thirty-five feet in width and sixty feet high in the center. The roof is carried on columns and trusses, and light from the sides of a clearstory. The slated roofs of the buildings show arched windows in gabled dormers.

The Henry Memory building, or the Exchange building, on Van Buren street and Pacific avenue, was designed in 1884, by J. M. Van Osdel. Wyoming valley blue stone was used in the foundations, basement and first-story trimmings, for the first time in Chicago, while Anderson pressed brick was used in the seven stories above. Some ornamental panel work in brick was introduced in this house exterior, and a beautiful building given to this section of the city.

The Parker building, fifty feet south of Jackson street, opposite the Board of Trade, was designed in 1884, by J. M. Van Osdel, to cost \$125,000. Red pressed brick and Vert Island red sandstone form the front. The basement and first floor fronts show this stone to advantage, while its use as trimming in the piers of the second and third floors is very happy. A heavy ornamental cornice marks the level of the sixth floor, or seventh, including basement, and above this are four grand pilasters, three double windows arched and showing ornamental spandrels. A parapet makes the sky line perfect.

The Hansen building, erected on the site of the old Times building (on west side of Dearborn, south of Washington), in 1884, after plans by John Addison, is five stories and basement in height. The first and second stories show piers and arches of rock-faced, buff, Bedford stone. A course of rich terra cotta marks the third floor level. Four grand pilasters rise from this belt course, between which, on each floor, are three square, double windows. Rich terra cotta panels extend from pier to pier, above and under the windows of

the fourth floor. The upper windows are flat arched, and these arches with the capitals at the piers carry a rich cornice and parapet.

The Washington park clubhouse was designed by S. S. Beman. The building, 136x97 feet, shows a high basement, two stories, attic and observatories, with a verandah sixteen feet wide surrounding the building on the first floor level. Though constructed of lumber, some of the fine effects of architectural design are not wanting, but the presence of Queen Anne details is objectionable. To the interior arrangement and decoration the visitor has to look for its elegancies. As a clubhouse, in connection with a driving park association, it is superior to anything in the world. The same may be said of the grand stand. It is unique in its extent and conveniences. The clubhouse, grand stand and stables were constructed in 1883-4, while yet the extension of the old Calumet swamp was the Yazoo Delta, of Illinois. Since its completion the fields of reeds and waters have disappeared, and far above the old lake bottom the foundations of large residences rest. The club has played a great and important economical part, as well as a grand social part, in the drama of city building.

The dimensions of the lot upon which the Chicago opera house stands are one hundred and seven feet on Washington street by one hundred and eighty feet on Clark street front. Under the contract entered into by the Chicago Opera House Company and the Pecks, the former is now paying \$30,000 a year rent on a valuation of \$500,000. This contract, made in 1884, provides for a revaluation every five years. The site was occupied by that house of pleasure, the Tivoli. The entrance to the opera house is on Washington street, and to the offices on Clark street. It was designed by Cobb & Frost.

The Donohue & Henneberry building, on Dearborn street, north of Polk, was completed in 1885, after plans by Julius Speyer. This must be credited as the pioneer of the great modern buildings on this street, south of Jackson. True, the Boylston was there, but it was not yet modernized. The Donohue & Henneberry building, from basement to attic, was designed for a great printing and publishing house. While light and ventilation are fully provided, architecture has not been overlooked, for the center of the facade presents forms worth adopting.

The Union club house, on Dearborn avenue and Washington place, completed in 1883, is a Massachusetts rock-faced, brown stone structure, 80x86 feet in area, and three stories, basement and attic high. It was designed by Cobb & Frost. The square bays, with a balcony on the top of each, semi-round, alored gables, solitary oriel, adapted mansard roof, with open promenade, circular turret and other architectural fancies, mark this building.

The Union League club house, designed by W. L. B. Jenney, was completed in 1885. Its location, on the corner of Jackson street and Fourth avenue, appeared, even then, a desolate place, but the members had faith in the district, and this was not disturbed by the prospect of the fall of the Federal building or the consequent demolition of their new structure. W. L. B. Jenney, the architect, adopted the fourteenth century Lombardie style for this house.

The Home Insurance building, erected in 1884, after plans by W. L. B. Jenney, fronts

one hundred and thirty-eight feet on La Salle street and ninety-six feet on Adams street. As originally constructed it was nine stories and basement, or one hundred and sixty feet in height. The isolated pier foundations were formed to carry four thousand pounds per square foot. The substructure of rock-faced Fox Island granite extends from basement level, (which in this building is the first floor) to the level of the third floor and above this are the walls of dark red Trenton brick with panels of terra cotta and trimmings of Vert Island red sandstone. The entrance shows four great polished, grey granite columns with corresponding pilasters and heavy entablature, carrying a balcony. The hall is a study in marble, and the main stairway a study in engineering and art. The second balcony in the center of the facade is carried on heavy, ornamental brackets and the third balcony on chaste Corinthian columns bearing brackets and a pilaster each side of the central window, similarly capped. The grand pilasters marking the corners of the center of the facade, and corners of the building and the piers between the windows compress the third and fourth stories into one story; the fifth, sixth and seventh stories into another; the eighth and ninth into a third story, leaving the grand arched windows of the tenth story to show between the fourth molding and the great cornice. Above the cornice, now the level of the eleventh story, is the balustrade, a beautiful piece of work in itself.

It is one of the largest office buildings in the country, and one of the first strictly fire-proof houses erected in this city. The wainscoting and flooring of all the halls are of Italian marble. The staircases are of iron and bronze, with threads of marble. Letters are mailed in a letter chute on every floor; there are six elevators, and the tenants can have either electric or gas light. In 1890 additional stories were constructed, and what was a proud symmetrical building in 1884, is now classed among the "sky-scrapers." The heavy green stone first story and polished grey stone columns give a charm to this pile of pressed brick and mortar which the additions to its height made in 1890 cannot take away.

The ten-story Counselman building, designed by Burnham & Root, was completed in 1884. The first story is constructed of Jonesboro dark rose-colored, rock-faced granite, and the superstructure of Anderson pressed brick (plain and molded), and Northwestern Company's terra cotta. Within, the floors are constructed of eight-inch hollow-tile arches; the partitions of three and one-half inch hollow tiles, with tile vault lining and column lining. Between the girders of the roof are hollow tile, and taking the place of slate are flat-glazed tile, placed in Portland cement. Fireproof suspended ceilings also mark this building—all the product of the Pioneer Fireproof Construction Company. This house, 46x60 feet and ten stories or 145 feet in height, shows little exterior ornamentation, the architects adopting instead the idea of massiveness and durability.

The Troeseher building, designed by Adler & Sullivan, is a seven-story house, 79x90 feet, constructed of brown stone, with square columns and arches of the same stone in the first story. Five slender piers of brick rise from the first story, and these piers are ornamented from the sixth story to the top. The sixth and seventh stories are highly ornamental.

The Gaff building, designed by S. V. Shipman in 1884 and constructed in 1884-5 is a

nine-story house with high basement, main entrance and facings in Fox Island granite, and the superstructure in Anderson pressed brick, plain and ornamental.

The Maller's building, erected in 1884-5, after plans by J. J. Flanders, has a thirty-eight foot front on La Salle street and extends west along Quincy street sixty feet. It is the first twelve-story-and-basement office building ever erected here, and proved an engineering feat worthy of the building days of 1890-91, for to carry up a narrow house thirteen stories is a serious undertaking now, when light-steel construction and the science of foundation work are well understood. The basement and first story are in Maine granite and the upper walls in Zanesville pressed brick. A corner tower, springing from a richly-carved corbel at the level of the second principal floor, banded at the level of the fifth floor, again at the level of the eighth floor, then at that of the tenth floor, and carrying heavy ornamentation from the level of the twelfth floor to its beautiful cap, abolished the idea of a corner pier, just as the grand bay, extending from the entablature of the entrance to the level of the tenth floor and the triple windows, between the bay and corner tower, abolished the notion of piers in the center. From the tenth floor to the level of the twelfth clustered pilasters extend and receive the arches of the windows in the twelfth story. Ornamental spandrels, a heavy bracketed cornice and a great balustrade mark the top of this extraordinary house. Above each bay and triple window at the tenth floor level a balconette is constructed and the whole assumes a repose extraordinary for such a high and narrow structure.

The Insurance Exchange, a Romanesque building, was completed May 1, 1885, after designs by Burnham & Root. Mortimer & Tapper were contractors for the foundations and E. Sturtevant for the brick work. It is 165x60 feet in area and nine stories and basement in height. A heavy batter wall or stone substructure with recessed square windows form the front of the basement or first story. St. Louis pressed brick and ornamental terra cotta are used in the superstructure, even to the coping of the great parapet. The round corner tourettes springing from corbels at the eighth floor level, the rich capitals and arched windows of the eighth story, the arcaded windows of the ninth story, the grand entrance and dressy center above, with its panels, balconette and tourettes, give repose to this large house which it never could possess without them. The architects compressed the whole into five stories or divisions with a view to give it harmony. Though the heavy rock-faced stone front of the basement varies from the pressed brick of the first story, the two form one story, well outlined by a heavy band no less than by large, round-arched windows and spandrels. So with the second and third stories, their colonnade of pilasters and band-course bring them into harmony so as to form one architectural part of a whole. The fourth story stands alone, marked by a band-course, but the fifth, sixth, seventh and eighth stories are compressed into one, the arches of the semicircular windows of the eighth resting on pilasters carried up from the level of the fifth floor. The ninth story or attic above the basement is arcaded, and forms, in fact, a frieze of arched windows close together, carrying the brick cornice and parapet. The low arch of the entrance springs from heavy, square columns, with its inner rings resting on carved monoliths. A cone-roofed tourette springs from a corbel at each side of the

spandrel, and between those round towers is a balcony, carried on a corbel, and on the wall level are two rows of windows in accordance with the plan of the windows in the second and third stories or second architectural division. The wooden joists are protected by the Wight system of porous terra cotta. A circular staircase, extending to the top of the building, and the grand Norman entrance are special features of this building. The house extends from Adams to Quincy streets, and may be numbered with the pioneers of the great office structures in the new Board of Trade district.

The A. T. Ewing block on Fifth avenue, south of Jackson street, was designed by H. B. Seely, and constructed in 1884-5. It is a Romanesque structure of the Italian school, showing the round arch in the entrances in the third architectural story and in the arcade of the attic, and the straight arch in the second story. The third, fourth and fifth stories are resolved into one in the pavilions and recessed center for architectural effect. The hanging buttresses, extending from the third floor level of the pavilions to a point above the parapet, grow larger as the height is increased, receive dome-like caps, and add to the symmetry of the facade.

The Temple Court building, occupying the northeast corner of Dearborn and Quincy streets, presents a rather plain front, relieved somewhat by the iron balconettes in the center of the facade. The eastern extension, however, compensates in a great measure for the plainness of the older building; for its great Romanesque entrance, its Indian ornamentation and grand central bay, bring it into competition with the Phoenix and Rookery. Why such a front should be hidden away on a short narrow street is one of the mysteries of the building arts in Chicago. The owners must have a prescience of the coming importance of that short street, as their neighbors on the east have shown their faith in it by the expensive remodeling of an old building.

The old armory of the First Regiment of the Illinois National Guards, No. 24 Jackson street, shows the Italian pointed style. It is a stone building castellated; but it is entirely out of place among the great houses in the neighborhood, any one of which is greater in size. A military building in any city of the United States must be great indeed to escape the jests of a great industrial people.

In August, 1884, plans for the nine-story model office, known as the Rialto, on Pacific avenue and Van Buren street, were prepared by Burnham & Root, who estimated the cost of such a house at \$350,000. As completed, in 1886, it not only covered a space which was a debris receptacle for fifteen years, but it also gave to Chicago a structure remarkable in many respects—presenting features of the Italian, French and Venetian schools—all good from the standpoint of the sanitarian; some bad from that of the utilitarian. The two large recessed open courts on the east and west fronts insure light and fresh air to the inside offices. The Van Buren street facade is divided into three architectural stories and attic. The system of pilasters effects this easily. The first and second are merged into one, so are the third and fourth in one, and the fifth, sixth, seventh and eighth in one. The ninth, or attic story, above the grand balcony, which, in this building, takes the place of the cornice, goes far to

prepare for an excellent skyline; but the upward extension of the piers, to form heavy pinnacles above, ignores the preparations and debases that line. It is a vertical building in fact, complete in its interior arrangement, but wanting in its exterior. Its bridge connection with the Board of Trade building exercised an influence in naming the house the Rialto.

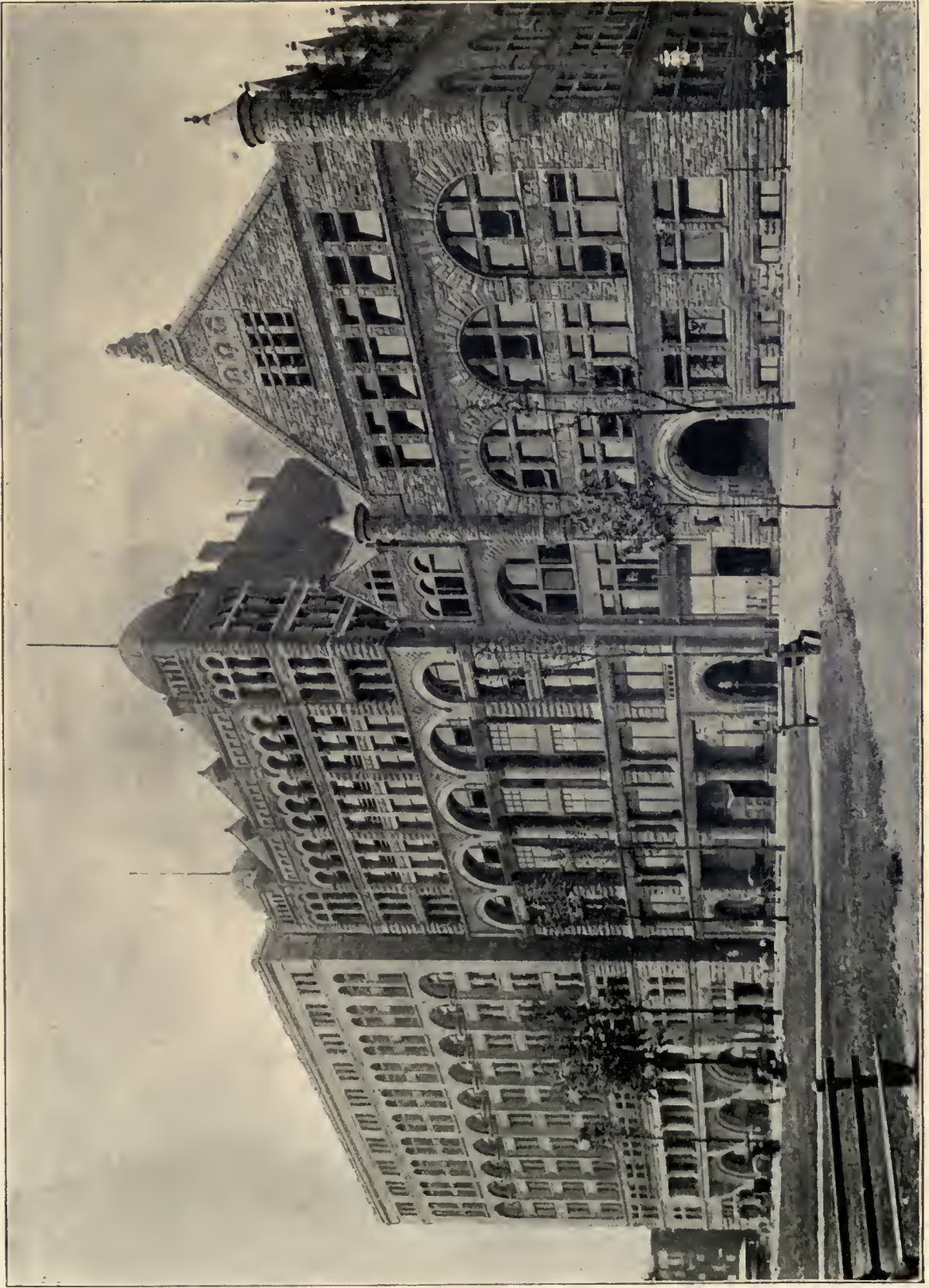
The Kinsley restaurant, on Adams street, east of Clark, was built in 1885. An adaptation of the Moresque style was adopted, and with this style terra cotta came into use as the only material for the front. The copper bays were introduced extensively in this building for the first time in such a large house, and the interior was made as elaborate and unique as the exterior.

The Art Institute, successor to the Chicago Academy of Fine Arts, dates its title, at least, back to 1879. In 1881 a building designed by Burnham & Root was commenced in rear of the old building, with a frontage of fifty-four feet on Van Buren street, and a depth of seventy-two feet. That form of the Norman called the Elizabethan was the style adopted, its high-pitched roof, gables and peaks being very definite. Monumental terra cotta work massed at the end of the building shows the principal entrance. In its spandrels are the medallions of Michel Angelo Buonaroti and Raphael; above, in the tympanum, are figures supporting the medallion of Leonardi. The grand hall, 20x45 feet, the grand stairway, the classroom, 32x40 feet, and private classroom, 16x26 feet, occupy the first floor; the picture galleries and a classroom, 33x24 feet are on the second floor, while the third floor are *en suite*. A peculiar system of lighting by side and skylight is observed.

The new building of the Art Institute, on Van Buren street and Michigan boulevard, is constructed of rock-faced red stone in Romanesque-Flemish form; was designed by Burnham & Root, to be unique, hence it shows a Romanesque or Norman entrance, helping out the severe architectural first story. The second and third stories are compressed into one by the use of arches in the windows of the third story. An extraordinary attic with its grand dormer, pediment and gable carrying aerotera mark this house. The corner towers or bartizans, crowned with statuary, the carved panels and moldings, the hip roof and finial, and the actual repose of the house are Flemish, dressed with Franco-American taste. It is without a flaw in construction, and its site is most valuable. Within, the decorations are French, and this may be said of the ensemble.

The Field building, on Adams, Franklin and Quincy streets and Fifth avenue, was designed in the fall of 1885, by H. H. Richardson, of Boston, to cost about a half million dollars, and the work of construction was entered upon before the close of that year. It is a brown-stone structure, about the size of the Leiter building, marked by simplicity in style and massive rock-faced stone. It is a study in civil engineering and architecture, which had no model here, a superb building fitted for a fort as well as for commerce. This building is fully described elsewhere.

The Clow building on Lake and Franklin streets was designed in October, 1885, by Cass Chapman, to cost about \$50,000. An adaptation of Moorish architecture was adopted, giving to that section a handsome six-story house, 46x100 feet.



FLEMISH STYLE.

THE ART INSTITUTE BUILDING.

ROMANESQUE ORNAMENT.

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In 1886 the six-story building on the northwest corner of Wabash avenue and Congress street was designed by Treat & Foltz, to duplicate the Donohue & Henneberry building, which was burned on that site in 1885. It is 80x175 feet, and cost the owner, John Q. Adams, about \$100,000. Its predecessor presented a very elegant exterior; but, when fire attacked it, the interior afforded such an intense heat that brick and iron were consumed.

The Bucklin laboratory on Michigan avenue and Peck court was designed by Oscar Cobb in 1885 in Renaissance form. He dressed it somewhat in Moresque attachments, yet succeeded in giving to the city a very fair piece of architecture. Anderson pressed brick with Carbondale brown-stone trimmings are utilized to the fullest extent. The windows are all heavily labeled and in the center of each facade this labeling takes the form of the complete horseshoe arch in the second, third and fourth stories and in the gabled dormer of the court facade. In the fifth story and in each front, a triple Alhambresque window takes the place of the single horseshoe. The corner tower springs from a dual corbel below the level of the third floor and is carried above the roof, where it receives a Kiosk top or rather merges into a Russo-Turkish cupola.

McCoy's European hotel, on the northwest corner of Clark and Van Buren, being ninety-five and one-half feet on Clark and one hundred and ten feet on Van Buren streets, is one of the earliest of modern buildings which the new Board of Trade building suggested for this section of the city. With the addition of the seven-story brick building purchased by him in 1886, the house may claim to be modern in arrangement and equipment. It was built after plans by Gregory Vigeant. The architectural features of the facade are strong and interesting.

The Foreman & Kohn block, on the southwest corner of Adams and Franklin streets, was designed in 1886 by Bauer & Hill, and commenced July 22, that year. It is an eight-story-and-basement-building, one hundred and thirty-four feet above street level and 100x125 in area, erected at a cost of \$200,000. Blue Bedford stone and St. Louis pressed brick were used in the facade.

The West Chicago clubhouse was designed in 1886 by Adler & Sullivan. It is 50x135 feet, constructed of pressed brick with stone and terra cotta trimmings, and is two stories, basement and attic in height. The second main story is the only one where an equal arrangement of windows is observed. The first story shows a bay on one side of a Norman entrance and an arched Wyat window with side windows on the other side. The center of the facade above the entrance is carried on hanging piers, springing from corbels below the level of the second floor, and carried upward outside or in front of the attic to receive a pediment. The retreating side walls in the attic show a series of coped steps, the first resembling a hanging buttress. A dormer marks one side and a casemate the other side of the large central window in this attic.

The Girard, Nos. 298-306 Dearborn street, destroyed by fire in January, 1888, was rebuilt at once after plans by Thomas Hawkes. All columns, girders, beams and posts were encased in hollow tile, and wire lathing was used in the ceilings. This protecting system was

carried so far as to suggest iron shoes for the wall ends of the iron girders, for in case of fire the girder would slip out without injuring the wall. On the Dearborn street front are two bays, carried to the sixth story with iron, brick and terra cotta. The recessed sections show arches on the fifth and sixth stories, while a stone course on the top of the seventh story forms solid window caps.

The McCormick warehouse was designed by Burnham & Root in 1885 and betrays the ideas prevailing in their office at that time.

The Rookery stands on the site of the City hall and water tank, a rude collection of brick which stood at the corner of Adams and La Salle streets from 1872 to 1885. It is a Romanesque building, showing, perhaps, more than any other great office structure in the world what license in style really means. There it stands, the admired of all office buildings. Lighted on four sides from streets and alleys and in the center from a great court, it is a thing of light. The first floor and mezzanine look out from behind the great polished marble columns and rock-faced corner piers. The third and fourth stories, with their square windows, are forced into one by beautifully constructed piers of dark brown brick with rounded corners. The fifth, sixth and seventh stories show pilasters instead of piers with the windows of the seventh story arched all in one architectural story. The eighth, ninth and tenth stories are similarly treated, and above the arches is the grand cornice. The attic story shows a number of rectangular windows in groups of two, and above them rise the parapet and caps of the corner bartizans. From the cornice, on the level of the eighth floor in the center of the west front, spring two decorated tourettes from corbels. Between them is the balcony on this level and wide windows corresponding in style with those of the architectural story. Above the attic rich work in relief takes the place of the frieze of the upper cornice or parapet, and above this rise the ornamental caps of the tourettes with coping between—all treated with the richness of India and Venice, but observing still the horizontal vertical forms which puzzle the Roman, the Gaul and the East Indian alike, and render its characteristics so striking. It is a distinct type of the Commercial style, and a monument to its author. It is a marvelous invention, winning admiration even from those who know its eccentricities and infirmities, charming every one like good music, and gladdening the citizen who sees in it a palace, raised above the old barrack and rat den of the tax-eaters of 1872-82, a house of stone and marble and brick of which Rome herself might be proud. Within are the wonderful vestibules with marble stairways and ceilings and rich mosaics, and farther yet, the great court of the building reveling in mosaic, and presenting that wonderful double iron stairway rising upward and upward from invisible supports. The whole building is a study from basement to attic, one in which the architectural student may revel for a long period in interesting and instructive research. It is one where the architect and mechanic may learn something new at every turn, and the adherent of style may behold the horizontal and vertical, equally balanced, ranged under the banners of the Romanesque-Commercial.

The Phenix building, designed by Burnham & Root, covers a narrow strip extending along the south side of Jackson street from Clark street to Pacific avenue. In construction

and architecture it presents many interesting points. The passer-by cannot credit it to the Romanesque or to the Renaissance. The traveler from Calcutta can discover Indian details, the Mongolian may see a slice of the pagoda, and the European a section of some famous building; but he who can identify the Phenix as a whole with any acknowledged style is as rare a bird as the mythological one after which the building is named. The grand oriel windows of the Phenix are each carried upward by three Indian columns, beautiful to look at, but difficult to construct and keep in order. The balconettes, the great balcony on attic level, the beautiful work in terra cotta, above the red stone substructure and the great arched entrance are all features of the Phenix seldom seen in any other building. It is a grouping of architecture, which, if given to a building, the square of its front would stand for all time a monument to the cosmopolitan ideas of its designers.

The Studebaker building of 1886, although following the Pullman building in order of time, won more attention from the people than any commercial building hitherto erected. It is Romanesque in the general style of S. S. Beman. Its bold granite front and great polished pillars still claim attention, even beside its gigantic neighbor, the Auditorium. The building is composed throughout of solid granite, stone and brick, with a highly ornamental front, and contains eight floors and a basement, each measuring 107x171 feet. The first story shows two immense polished granite columns with carved stone capitals and pedestals. Between them is the principal entrance, and on each side the large show windows. The north gateway shows a heavy arch, resting on four clustered pillars with spandrel, all between rock-faced stone piers or pilasters. At the south end the arch is carried on two square, heavy polished granite pillars. Six rock-faced pilasters and ten chaste polished granite columns, carrying a heavy entablature, mark the facade of the second story. The third, fourth and fifth stories are compressed into one. Four rock-faced pilasters and two beautiful polished granite columns in the center, corresponding in location with those in the first story, but much higher, have their bases on the entablature and extend to the level of the fifth floor where they receive five stone arches, the three central arches large and the two outside arches small, all forming an imposing arcade, tending to give the second story an entresol appearance. A casemate sash is recessed in the arch of each. Four perfect spandrels and two semi-spandrels extend to the band-course, marking the level of the sixth floor. The sixth and seventh stories are compressed into one by six rock-faced piers and six plain pilasters. On the level of the eighth floor is the cornice and above it fifteen arched windows, forming a beautiful arcade. The north and south corners assume tower form at the sixth floor level, and this form becomes more pronounced toward the top, showing pinnacle, balustrade and hip or pavilion roof, carried at a higher level than the balustrade of the central section. Withal this the skyline is not so strong as the beautiful building demands. After the completion of the Auditorium it was apparent that the process of settlement had begun along the southern side of the Studebaker structure, but beyond the lowering of a section of the south arch, a defect which has been remedied, the foundations met their requirements. In February, 1891, the work of raising the southeast corner pier was undertaken by Hollingsworth

& Coughlins, and by the close of June, 1891, it was completed and the settled parts raised eight or nine inches to their original places.

The building adjoining on the north may be considered as a study in the Norman branch of the Romanesque. The clustered columns and great arch distinguish it from its neighbors on the north and south, while its recessed position conveys the idea that it had and has no pretensions to compete with them.

The Rock Island depot stands on the site of the first large building in that section, completed in 1867 and destroyed in 1871. As rebuilt in 1871-3 and 1887, it is a gray sandstone house, 605x187 feet in area and five and one-half stories high, with flanking towers and central projection. The Italian style of architecture rules in the exterior. Within, it is all ancient, dark, dusty and musty, inconvenient for suburban travelers, and altogether illy adapted to the wants of a modern union depot.

The site of the burned Phelps, Dodge & Palmer warehouse, on the northwest corner of Adams street and Fifth avenue, was covered in 1888-9 by the design of Burling & Whitehouse. This is a double six-story-and-basement house constructed of chocolate-colored pressed brick, with dark terra cotta facings. It fronts one hundred and twenty feet on Fifth avenue and eighty feet on Adams street, with a section showing eighty and sixty feet on the respective streets. The destroyed building was a modern improvement in itself, but compared with the present building it was but a piece of good engineering.

The Telephone building, on Washington and Franklin streets, is strictly Romanesque in the first story, but wanders round in the regions of the vertical above.

The seven-story structure, 24 and 26 Adams street, was designed in September, 1888, by Pond & Pond, to cost about \$60,000. The first two stories are of Bedford stone, and the remainder of the exterior walls is of pressed brick. The ground dimensions are 40x80 feet. The front of the building is extremely attractive. An arch spans the entire front of the lower story, behind which is a broad bay show window, with recess on either side for entrance to gallery and offices; also heavy piers at each corner so arranged as to obstruct as little light as possible. The top story front has two ornamental bays over which the main roof extends. Two floors for gallery purposes and five for offices is the division made.

In April, 1888, plans for the First Regiment Illinois National Guards armory, on Michigan avenue and Sixteenth street, were completed, and bids asked for the erection of a building 284x171 feet, arranged for stores, flats and hall. In February, 1889, plans by Burnham & Root were accepted and the work of construction commenced. The structure has a very solid and fort-like appearance. The walls of the first story are of solid masonry, pierced by no windows. The stone used is rock-faced. The main entrance, on Wabash avenue, is arched and sufficiently wide to admit of the easy entrance of sixteen men abreast. The first floor of the interior is used for a monster drill room, measuring 156x154 feet. A dome-like court extends upward from this room to the skylight. On two sides of this central opening on the second floor are arranged twelve company rooms, from one corner of each of which is an iron stairway communication with a like-sized room above, containing lockers and other

conveniences. On the other two sides of this gallery story are located the officers' quarters and the library and reading rooms. The basement contains vaults for the storage of ammunition, two shooting galleries with six targets each, a bowling alley, shower-bath facilities, etc. The whole structure is heated by steam.

The Walker building, on the southwest corner of Adams and Market streets, is a very elegant exponent of the Romanesque. There are the great arches springing from short piers in the first story, and the upper arches and piers compressing, as it were, four stories into one. Above the level of the first floor it partakes in a measure of the Auditorium style, the cut stone used in the facades aiding materially in the exhibition of strength and style.

The Owings building, that unique, old Dutch 50x70x217 feet pile of stone, Anderson drab pressed brick, gray terra cotta and carved stone, was designed in June, 1888, by Cobb & Frost, for F. P. Owings, to cost over \$200,000. The first three stories show heavy batter piers, three feet thick, in rock-faced stone, with stone piers in the center of the square windows in the first or basement story and in the third story, a system carried out *in toto* in brick above the substructure, where the fourth, fifth, sixth, seventh and eighth stories are forced into one by the use of high pilasters. The square windows of the second or main floor are divided by polished granite square columns, carrying rich capitals. The Norman-Gothic entrance shows the finest piece of spandrel work in the West, and this is duplicated in the tympanum of the north gable, and partially carried out in that of the west gable. The grand band, on the level of the eighth floor, shows frieze and cornice in relief, and with other abridged bands, relieves the vertical style of the building. The corner tower, really a grand bay, springs from a double stone corbel, on the fourth floor level, to its cornice, where it receives a cone roof or spire, the finial of which is two hundred and seventeen feet above street level. The extraordinary tile-coped gables of this house are landmarks too prominent to escape notice. The base is not so large as that of the Auditorium tower, yet it is so constructed that it carries a high slender structure without external supports. The foundation is a great bed of concrete and railroad iron of immense transverse strength. An accident occurred during construction, which proved the strength of the walls. It was nothing less than the fall of the heavy tank, carrying with it a few of the floors, but leaving the walls uninjured. The girders and beams of steel are extraordinarily heavy at the top of the third and eighth stories. The partitions and floors are constructed of hollow tile, and, with the exception of the sash, doors and frames, there is nothing in the structural material to burn. The sanitary arrangement is modern, and the principles of light and air are observed in every particular.

In January, 1888, the plans for the Tacoma building were begun by Holabird & Roche, architects. As outlined then, the following features were presented: Four heavy brick walls, three and one-half feet in thickness, are built; one at the north side of lot, one in the center running east and west, one in the center running north and south, and one on the east or alley side, forming a thorough wind-brace for all directions. The foundations for these, as well as for the balance of the building, are a combination of steel I beams and Portland cement concrete. The whole facade of the building, however, is constructed of wrought iron,

steel, terra cotta and plate glass. The interior and exterior columns are of cast iron, running from basement to roof, and thoroughly riveted together. From these columns heavy steel girders extend to, and are firmly anchored into the massive brick walls. Upon these girders the steel floor beams rest. Each floor is treated as a horizontal truss, being firmly riveted together with red-hot rivets and stayed and tied diagonally. This gives great lateral stiffness. The result of this construction is an absolutely rigid building from foundation to roof. The floors throughout, and the roof, are of hollow terra cotta, arches, and all iron and steel work in the building is fire-proofed with terra cotta, including the basement and first story, so often left unprotected. The partitions are also of hollow tile. The interior is expensively finished in marble, cabinet-finished hard wood and plate glass. One peculiarity of the building is the entresol floor, with plate glass front, like the modern store fronts. Owing to the size of the lot, occupying one hundred and one feet on the northeast corner of Madison street, and eighty feet on La Salle street, the peculiarities of construction had to be studied, unnecessary where a larger area for foundations exists, so that the masonry is massed in the center by heavy walls running thence to the four sides. Upon this lot the Tacoma towers upward twelve stories and attic above the basement. The first story is given up to stores and the two main halls, one entered from Madison street and one from La Salle street, converging at the five elevators in the center of the building. The spiral stairways are in the rear of the elevators, and in the rear of the stairway is a great court, with walls of white enameled brick. The whole interior is well lighted and ventilated. Every office has a window opening to the live air, and in other respects, the sanitary arrangement has never been excelled. The building has electric light and gas, with fixtures for each system as may be chosen by the tenants. The Madison street front shows four great bays, rising from highly ornamented corbels on the second floor of the entresol level to the band-course at the attic level, where each merges into a loggia, the columns of which carry the projections of the main cornice over the bay. This plan is repeated on the La Salle street front, which shows three bays. The entresol is extended to suit utilitarian ideas. A light terra cotta band-course marks the level at each floor to the fifth story, leaving the fifth, sixth, seventh and eighth floor levels to be marked by a plain molded string-course. At the levels of the ninth and eleventh floors, the band-courses are repeated, and again on the attic level. The main cornice is a thing of beauty, and the pier forming the southwest corner is no less telling in effect, for without it the great bays would lead the observer away from the thought of a pier in so great a building. The Tacoma symbolizes the triumphs of Chicago. It was completed in May, 1889, or within eleven months after the walls or foundations of the old dingy building, which held the site since the great fire, were removed. This was the first building erected with screen walls, supported at each story, using iron and steel for carrying all weights. It is a vertical building, in counter-distinction to the Romanesque horizontal houses of the city, but Romanesque ornament is retained. The sanitary plumbing of the Tacoma building is described in the pages devoted to the subject, and its system of foundations treated under the head of foundations.

The Libby Prison War Museum Association of Chicago leased in February, 1889,

283x173 feet west front on Wabash avenue, between Fourteenth and Sixteenth streets, opposite the Haven school and where Fifteenth street would be were it cut through. The terms of the lease are \$7,800 for ninety-nine years, with revaluation which is about a six per cent return on a \$500 per foot valuation. To this site the terrible prison was moved from Richmond, Va., not as the Coghlin's would move such a structure, but in atoms or by bricks, boards and timbers, each of which was numbered so that in rebuilding in the West each would hold the same place occupied by it in Virginia. Over 900,000 brick were thus carried hither in one hundred and thirty-two twenty-ton box cars and replaced according to the number and plans made by C. M. Palmer. The prison, which was formerly used for a tobacco warehouse, is five stories high, one hundred and seventy feet long by about one hundred and twenty feet wide. The outer walls are of brick, while the interior is of frame construction. Here it is surrounded by stone and brick walls. A wall of black artesian well stone, twenty feet high and two hundred and eighty feet long, relieved by trimmings of Illinois limestone to make it as gloomy as possible, extends along the front. It has an arched entrance, with towers on both sides and towers at either end of the wall, constructed of stone, with slate roof, in which are the offices of the company. A wall of brick fourteen feet high extends round the other sides. In the northeast corner of the lot the heating and lighting plant is erected. The estimated cost of the building in reconstruction and the walls is \$75,000. It is now filled from cellar to roof with war relics of every description, all of which are replete with historical interest and subjects for entertaining war stories. The walls are covered with oil portraits of every noted federal and confederate general and statesman, thrilling battle scenes and pictures of incidents and scenes of the war period, and there are two hundred glass cases exhibiting original official documents and personal letters in the handwriting of all the noted men identified with the Civil war. There are also specimens of every kind of shot and shell, and every style of pistol and gun used in those days.

The Hamlin theatre, on Wabash avenue, presents a facade which requires more than a cursory glance to understand. The great entrance and other parts convey a Romanesque impression, but on closer scrutiny the Alhambresque appears.

The Timmerman hotel, on the northwest corner of Stewart avenue and Sixty-third street, is 125x129 feet and four stories in height. The exterior walls show Anderson pressed brick with Michigan green-stone trimmings. Galvanized-iron bay windows relieve the fronts. On the busy business street and the broad avenues adjoining the hotel is the opera house, 54x114 feet and forty-five feet in height, but from stage to roof it is seventy-five feet in height. The decoration of the auditorium is Byzantine in style.

The Rosalie music hall, designed by S. S. Beman in 1885, is 60x103 feet in area at the first floor, with second story projecting three feet at sides and five feet in front and rear. Pressed brick is used in the first story and open wood work and shingles in the upper stories.

Fort Sheridan is practically a Chicago building. It is a modern military institution, resembling a collection of college buildings rather than a barrack, a delusion which its location on the shore of Lake Michigan is not liable to dissipate. The "quarters" is a three-story

house about four hundred feet in length, constructed of Milwaukee brick. Two balconies run along its front. Within, it is finished in natural pine and equipped with the conveniences of a seaside hotel. A building similar in size and style may be considered a wing of this first barrack. The square tower, tapering toward the top, where it receives a hip-roof, is two hundred and fifty feet in height. Were it round, the archæologist might look upon it as an Irish round-tower. The presence of brick in its construction abolishes the idea of strength and endurance, which such a structure should convey. With the aid of piers and pilaster-strip, great panels are shown, which are pierced by casemated windows, arranged one above the other with too much regularity.

The Auditorium is to the city of 1891 what the Palmer house was to that of 1874. Not only does it prove the expansion of ideas of greatness in the building arts, but it also proves the widening of the business center. It was projected by men who had and still have large interests in the city, as a patriotic rather than a commercial enterprise; yet it has fulfilled the aims of citizens' pride and compensated its builders from a commercial standpoint. The Auditorium has a frontage of 362 feet on Congress street, 187½ feet on Michigan boulevard, and 162 feet on Wabash avenue. Maine granite and buff Bedford stone form the exterior of the walls. Seventeen million brick were used in the interior walls, and 6,000 tons of iron and steel in the whole building. Sixty thousand square feet of polished plate glass; 50,000 square feet, or 50,000,000 pieces, of Italian marble in the mosaic floors; 30,000 square feet of French mosaics, and 60,000 square feet of ornamental tile. There are 500 windows, 2,000 doors, 10,000 electric lights, 11 dynamos, 230 miles of electric wire and cable, 160,000 lineal feet of furring iron, 175,000 square feet of wire lathing, 760,000 square feet of terra cotta and tile in arches and partitions, 25 miles of gas and water pipe, 11 boilers, 21 pumping engines, and 13 elevators. No less than 25,500 pounds of white lead and 46,875 square feet of gold leaf were used in decoration. The excavators having removed about 28,000 cubical yards of sand, a pine-plank flooring of 1,000,000 feet of lumber was placed, and on this floor a bed of concrete, 4 feet in depth and 62,000 square feet in area, was spread, in which steel rails were imbedded. There are 4 miles of steel rail in the foundation of the tower alone, carrying the weight (15,000 tons) of that structure, while the 86,000 tons, representing the balance of the building, are carried on equally strong foundations. The main structure is 145 feet above the sidewalk; the tower, which in itself is a larger affair than the Owings building, is 240 above the sidewalk, the lantern 265 feet, and the top of flagstaff 296 feet. The building, as a whole, is an independent form of the Romanesque, pointing to independent thought and action. Its owners witnessed the destruction of a city, and, like Justinian of Byzantium, in the restoration of the dome of St. Sophia, they resolved to have an indestructible building. The Romanesque idea was in consonance with this resolve, and hence it is the predominating feature of the great house, even though opposed by the great Doric columns and heavy lintels of the first story, and the repetition of this feature on a lighter scale, in the last story of the main structure, and far above this in the tower. The batter piers of the substructure, to the level of the fourth floor, the arched, transomed windows of the

second story, the union of the fourth, fifth, sixth and seventh in one architectural story by means of piers, pilasters and arches, and the extension of this system to the eighth and ninth stories, leave no room to doubt the mastery of the Romanesque. Above the third story the walls are treated in ashlar and the moldings cut in the heavy rock. Stability and massiveness are apparent in all its parts, as if intended to be carried down the centuries like an Egyptian pyramid. If a building may present a magnificent exterior and yet be wanting in beauty, that one is the Auditorium, varying in this respect from the work of Garnier of the *Ecole des beaux Arts*, who combined both. The grand balcony on the east front; the tower, with its attic colonnade, more Egyptian than Doric, carrying out the idea expressed in the tenth story of the main building; the great polished columns in the first story, the peculiar entresol over the Congress street entrance, once seen are always impressed upon the memory.

Interiorly the Auditorium is magnificent. It is at once an office building, a hotel and a theater. The Wabash avenue front is the commercial division, the Michigan boulevard front the hotel division, and the center of the Congress street front the theatrical division. In the commercial division are 126 rooms distributed between the ten floors, each finished in oak. The entrance on Wabash avenue leads to a hall, which, in any other building than this, could be called the grand hall. The marble and iron stairways and three elevators are found here, ostensibly leading to the balcony and family circle of the theater, but really to the offices of the commercial or professional tenants of the western division. The tower is in the center of the Congress street front. It is 100x67 feet in area at base, and 70x41' from basement level for 240 feet, or up to the cornice of the eighteenth story. Above this is a two-storied structure, or lantern, of iron and terra cotta, twenty-five feet high, and 9x18 feet in area, thus giving a total height of 265 feet, or twenty stories. In the first story is the great hall. It is a model of elegance. The great porphyry columns, the marble walls, the floor of mosaic, the works in mahogany, the high-arched ceiling, and the bronze work of box offices and elevators, tell of grand designs carried out by the artisans.

The vestibule is 117x59 feet. With its great square pillars and their heavy ornamental capitals bearing the vaulted ceiling, it is an apartment worth a study in itself. From it you descend to the toilet and smoking rooms, or ascend to the grand foyer. Marbles and woods and bronzes meet the eye on every side. The great and lesser stairways are works of art in material, decoration and plan. Their walls of polished mahogany, balusters of bronze and landings of mosaics appeal at once to the senses and invite ascent.

The grand foyer or lobby is 117x59 feet in area. Its fluted columns covered with scarlet seagliola, mark the head of the stairway. Square columns, similarly clothed, bear golden capitals. The nooks each side of the great stair, forming a part of this foyer, the ladies' parlor and the smoking room off it are fairy palaces in mosaics, mirrors, gold and colors, pictures in solids. Square pillars in amber seagliola, mark the upper floors to the balcony foyer, which, though a little narrower than the grand foyer, presents the same rich columnated appearance. The coves in a part of the gallery, and in the family circle are, in reality,

hinged ceilings, capable of being reversed on a half circle, shutting off those parts of the auditorium. They hang on steel frames and weigh twenty tons; but may be lowered or raised at will, according to the space demand of the audience.

The proscenium arch, with its grand portrayal, in relief, of the sacred and profane, only excels the great flat arch of the ceiling. Though the design is suggested by or was borrowed from one of the Jesuit churches of continental Europe, it is connected here so beautifully that it is difficult to point out a fault in all this work of Healy and Millet and Sullivan, for it is all intertwined so as to render all perfect, and the omission of one part would destroy the beauty of the whole. It is a sea of old ivory and gold and color used with the nicety of nature under the direction of art. Whether in the ceilings of vestibules, foyers or auditorium, in the great round and square columns or in the walls, at the back of the boxes, the hand of the true decorator is visible, but the minutæ of his work is indescribable. A volume might be devoted to the glories of this one room, and yet not be a complete description of all it presents.

The seating capacity of the theatre is six thousand two hundred and fifty. The sixty boxes have seats for two hundred persons, the body of theater for four thousand and fifty, and the stage, requisitioned in the case of national or other conventions, for two thousand. In addition to this, there is standing room for one thousand five hundred persons, thus giving a capacity of seven thousand seven hundred and fifty. The recital hall, decorated in white and gold, is a small theater in itself with a seating capacity of five hundred. It occupies a section of the seventh floor in the west division of the building.

The hotel occupies the western division with entrance on Michigan boulevard. It contains four hundred rooms, together with the great office and great dining room. The former shows a dado of Mexican onyx ten feet in height, with columns and pillars. The latter, one hundred and eighty feet long, commands a view of the lake. Its decorations are as rich as they are appropriate. Over the stage of the theater is a four-story structure, 70x110 feet in area, connected with the eastern division by bridges. Therein are the kitchens of the hotel and many chambers. Eighteen months before its completion, and within a few months after its foundations were finished, a great hall was prepared for the republican national convention of 1888. The building was dedicated in December, 1889, or within two years and eleven months of the day on which the beginnings of the foundations were made. A critical description of its decorations will be found in the chapter on mosaics.

The reconstruction of the Field building, on State street, at the beginning of the decade; of the old First National bank building, in 1883; of the United States Express Company's building, the Portland block, the Illinois bank building; the Home Insurance, the Schlesinger & Mayer block, the old Kentucky block (now the Quiney), the Chicago & Rock Island railroad depot, the Dyche block, McVieker's theatre and hundreds of other buildings in the central business region, such as the Cisco, the Lennox, the Chamber of Commerce and the L. J. McCormick building, on La Salle, near Washington, are equally strong evidences of progress in the new style, as are the mammoth office buildings brought forth anew. Old

buildings along Washington, Dearborn and La Salle streets have had the old bank entrances lowered and have been furnished with elevator service. Additional stories have been placed on all buildings which can bear them, and almost every recent purchase of central property has been followed by some alterations in the improvements. The Home Insurance building had two stories added to it, the northwest corner of Madison and La Salle was remodeled, the Frye building built up three stories, the Lambert Tree building, farther north on La Salle street, enlarged by the addition of two stories, the Portland block, on Dearborn street, altered, the Illinois National bank building and the Dyehe building, each had two stories added. The work of reconstruction and remodeling is not confined to the great old buildings of the central business district. Throughout the three divisions of the city and even beyond the new limits the desire for improvement has been carried.

The Chamber of Commerce portrays in the highest form the metamorphosis of the Roman-Doric Board of Trade of 1871-2 into a modern Commercial structure. The total height, from sidewalk to coping, is one hundred and eighty-four and one-half feet; the height of central court from first floor, one hundred and ninety-eight feet; the width between railings ninety-nine feet, the width of central court thirty-four feet; the width of court between railings, twenty-two feet, the number of rooms, nine hundred and the cost of remodeling, in round numbers, was \$2,000,000. The lot upon which the building stands is independent of all surroundings. On the north is Washington street, on the west La Salle street, each eighty feet wide; on the south is Calhoun place and on the east is an open court thirty feet wide, so that the building is lighted naturally and splendidly on all sides. Here was erected, just after the great fire, the old Board of Trade building. This was a low, massive structure, and one of the handsomest ornaments of the city. It was designed to accommodate the Board of Trade for all time, but the architect had not taken into account the probabilities or the possibilities of the future. Before ten years had rolled by, the Board of Trade felt cramped within its walls, and a new and larger structure became necessary to accommodate the produce and grain traders of the city. Then the Greeian structure was deserted. It had lost none of its beauty, none of its massiveness, but it was an elephant on the hands of its owners. All sorts of suggestions were made as to its future use, but none of them were practical. Property worth several thousand dollars a front foot grew restive under a structure that, though beautiful, was wanting in usefulness. It changed hands. Finally it was purchased by Hannah, Lay & Co., practical business men, and the idea of the new Chamber of Commerce building was conceived. It requires more than one brain to conceive and direct the execution of a great feat in architecture such as this is. The idea was born in the minds of the new owners; it was put into tangible form by Bauman & Huehl, the architects; it was crystalized by George Tapper, the superintendent of the construction. The details were placed in the hands of men who, in their various trades and callings, have attained eminence. From foundation to roof every inch of the building bears the impress of superb workmanship. There is not a trace of shoddyism about the structure. There is no veneering. There is no paint. Everything from the mosaic ceiling of the first floor to the Italian mar-

ble wainscoting of the thirteenth is real—not an imitation. No cheap substitutes have found their way into this work. The question from the beginning was to determine what was best and then to secure it at any cost. “In July, 1888,” says Mr. Tapper, “we put the old Board of Trade building on screws, took out the old and put in the new foundation.” Mr. Tapper can refer to a matter of this kind as a mere trivial event, for he has become accustomed not only to seeing but to doing wonders in building here in Chicago. To “put the screws” under a massive granite structure eighty feet in height, and hold it in mid air while workmen were engaged in tearing out the old and putting in the new foundation, seems an easy thing now, but what a wonder it would be to the builder of a half century ago. The new foundations planted upon tiers of railroad steel were calculated to defy an earthquake, and so firmly are they imbedded in the earth that they may be considered part of the sphere on which we live. They are capable of bearing twice the weight of the structure that rises above them. But the Chamber of Commerce building does not depend upon these foundations. They support only the four exterior walls. Those four exterior walls might fall, or be taken down, and the entire interior of the structure would stand just as firmly as it does now. In such an event a mammoth pigeon house of steel and iron rising two hundred feet in the air, the interior of the five hundred offices being exposed to the vulgar curiosity of the outside world, would be seen; but the great frame work of steel and iron bolted together as it is, as securely as the ribs of an ocean steamer, would stand as erect and solidly as it did when surrounded by the four walls. The entire interior rests upon its own foundations—foundations that were laid even while the walls were suspended on jack screws and before the roof of the old Board of Trade building was taken off. The floor weights were carried on in the interior for months before the public had any knowledge of the progress being made. Perhaps more idea of the strength and magnitude of this interior may be obtained when it is learned that between thirty-one and thirty-two thousand tons of steel and iron were consumed in the construction of the building, the greater part of which, of course, entered into the frame work, floor supports and arches, the latter being solidified with terra cotta and cement. The great building is thirteen clear stories and attic high, above the basement. The eleventh, twelfth and thirteenth stories are finished with the same high degree of excellence that one finds on the first, second and third. There are two general entrances, one on Washington and one on La Salle street, while all the offices on the first floor open on the streets, the passage on the east and the central court. The main entrance is at the Washington street front and on passing the doors you find yourself standing on a marble mosaic pavement in a vestibule fifteen feet square. A base of light buff-colored Burgundy marble forms a plinth to wainscoting of carefully chosen Italian veined white marble. Two windows of noble proportions, one to the right and one to the left, are framed with the same buff-colored marble, and at the height of the ceiling of the ground floor an entablature marks what in ordinary circumstances would have been the space from ceiling to floor. This architectural feature is very pleasing. A band three inches wide of Portuguese marble of a pale pink color forms the first member. It is succeeded by a frieze twelve inches wide of Burgundy marble, which in its turn is capped by



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a projecting molding of Portuguese marble. Above this, east and west are windows like those below, similarly treated; at right angles with them is a transom light over the main doorway, while opposite to it a bold elliptic arch finishes the north side of the second floor, from which, leaning over a marble slab on railings, you can gaze into the vestibule below. The main doorway, the arch above it, the elliptic arches, the windows, all are surrounded by buff-colored Burgundy marble. Between these frames all the walls are encrusted with the same Italian veined marble as below, and finally, above an entablature varied in detail to the one beneath of Portuguese and Burgundy marbles, a ceiling of marble mosaic of original and charming design, the first of its kind ever fixed in the United States, produces not only a striking effect, but also stamps the building as altogether unique. Marble mosaic pavements are on all the floors; that in the light court is designed as a carpet and a very handsome and elaborate scroll forms the border. The ceiling in the La Salle street entrance, and, indeed, all the ceilings of the ground floor, are marble mosaic. If you take the elevator to the top story you will notice that the high wainscoting of every floor is the same Italian veined white marble that attracted your attention in the vestibule and you cannot fail to be struck with the novel and interesting arrangement thereof, so unlike any other marble wainscoting you have seen elsewhere. Blocks of marble with pronounced veining have been chosen, and the slabs, after being sawed, have been turned over so that the veining of one face is taken up by its neighbor, and the effects differing in every set of slabs produce a series of designs that would seem to be the result of an artist uncommonly clever in the use of his pencil. Returning to the first floor you find the elevators in the space between the marble vestibule and the light court. There are eight of them, and the speed and the smoothness and the safeness with which they travel up and down have elicited the highest praise from the tenants in, and the visitors to, the building. They run within bronzed cages, are beautifully finished, and make their trips with the regularity of clock work. These elevators carry one so rapidly and so safely to and from the upper floors, that offices in the higher stories are even more desirable than those lower down.

The advantages of the altitude as regards fresh air, freedom from the noise of the streets and practical exemption from smoke, are so well known and thoroughly appreciated that it is unnecessary to comment upon them here. That the demand for high offices is increasing, however, is a well-known fact, and the probabilities are that the old way of calculating rents will be reversed. It looks now as though the higher up in the future, the higher rents will be. A freight elevator (entrance on Calhoun place) also runs from the first floor. This is located at the south side of the building. The passenger elevators are operated by hydraulic power, the freight elevator by steam.

Standing upon the mosaic floor of the first story in the center of the building, throwing back your head and looking up, you will see twelve balconies with their bronzed railings rising in perfect symmetry above you. Away at the top, one hundred and ninety-eight feet, and crowning this grand central court is probably the largest skylight in the world. It is a plate-glass arch, thirty feet wide and one hundred and eight feet long, and its weight is supported

on iron and copper frames which rest upon iron trusses. The frame is bronzed and finished handsomely. Through this mammoth window in the roof a perfect flood of light penetrates the central court, so that the interior of the building is almost as brightly illuminated as the exterior during the day. As you look up, if your neck will bear the strain, you will notice that not a post or a pillar is visible along the sides or between the twelve balconies other than those at the north and south ends, the intervening stretch being perfectly clear and free from obstruction. Those twelve balconies or galleries are self-supporting, or rather they are sustained by one hundred and twenty cantilevers, which are anchored beyond the beams that surmount the central columns which form the interior foundations. These cantilevers are assisted in the performance of their functions by one hundred and twenty brackets, which, in addition to being useful, are highly ornamental. From the end of every one of these cantilevers there hangs a group of electric lamps. There are nine hundred and fifty of these in all. It is when these lights are blazing at night that the marble wainscoting, the mosaic flooring, the bronzed railing, the polished wood-work and the chipped glass of the interior produce their grandest effects; but even in prosaic daylight there is an air of elegance about this grand central court that extorts from the coldest of observers the warmest encomium.

As before remarked, the floors are supported upon arches which are composed of porous terra cotta tile and cement. The top floor of hard wood is seven-eighths of an inch thick, and with the doors, and door and window frames, composes all the combustible material in the building. The wood work is finished in the finest red oak, of an enduring and handsome character. Three kinds of finish for iron work enter into construction—the electro-plated, the bower-buffed, and the duplex copper-plated. The ornamental iron work adds greatly to the appearance of the building. It is excellently finished and substantial throughout, all of the designs being new. The workmanship in every department ranks with the very best ever done in the city. Every detail has been attended to, from the magnesia covering of the steam pipes to the insulation of the electric wires, from the heating apparatus to the ventilating devices, from the illumination of the rooms to the sanitary appliances in the basement.

The steam-heating apparatus is something that cost a great deal of time and anxiety in this part of the building. A number of devices were treated before the system finally accepted was chosen. It is believed to be the best in existence. The registers are novel in design, and the work has been done in a most commendable manner by the firm which had charge of it. The hardware also, even to the door locks and knobs, especially designed for this building, bespeak the work of a careful house, and one that takes pride in its business. The glass in the exterior, all plate, and the glass in the interior, all chipped, is of a superior make and costly. The pumping is as perfect as it was possible to make it, every pipe in the building being within easy access at all times. Shafts extend from basement to roof, through which are conveyed the water, steam and drainage pipes. In the basement, which is paved with marble tiling, is the machinery wherewith the elevators are run, the water pumped, the

electric light produced and the heat furnished. Here there are two engines of one hundred and seventy-five horse power each, and four dynamos of eight hundred lights each; there are nine steam boilers, the shell of each of which is made of two plates, of the best Otis steel, all set with Murphy's smokeless furnaces, which cost fully as much if not more than the boilers themselves. Then there are seven pumps, two for house service and three for elevators, two of which are for boiler feed. The two elevator standpipes are twelve inches in diameter. The heating is done on the exhaust system, all heat being first carried to the attic. The water for general use is pumped into six immense tanks in the attic, the combined capacity of which is nineteen thousand gallons. Two of these tanks are for house service and four for the hydraulic passenger elevators. There is one thing that strikes one as being remarkable in the Chamber of Commerce building. This is the entire absence of vibration. Notwithstanding the constant operation of the elevators and the machinery in the basement, not the slightest tremor is manifest. The building rests so firmly on its interior and exterior foundations and is so perfectly balanced in all its parts, that vibration is impossible. In the foregoing pages an endeavor has been made to point out the main features of a structure that is destined for many years to come to be one of the leading buildings of the times. Every day hundreds of strangers visit it and are amazed at its height, dazzled by its beauty and awestricken by its magnitude. Certainly, those who have contributed by their handiwork toward raising this ornament for the present and future generations are entitled to credit. The structural work was furnished throughout by Vierling, McDowell & Co., Iron Works. All the facings for the entire fronts above and between the old stone piers are terra cotta, manufactured and set by the Northwestern Terra Cotta Company. In order to change the old faades so as to conform with the new and larger design, and admit more light into the building, much of the old stone work had to be cut out, and what was left had to be recut into new forms. This part of the work, involving great care and engineering skill as well as much danger, was carried through by the Young & Farrel Diamond Sawing Co., with entire success and without accident. The same company also furnished the planed stone sidewalk surrounding the building, including the unusually large stones in front of the main entrance. The foundations of the mammoth pile rest upon one hundred and sixteen cords or one million five hundred and eight thousand pounds of crushed stone concrete. This was furnished by Doles & Shepard, manufacturers of, and dealers in, crushed stone, concrete stone, limestone for flux, slag and cinders. The skylight, which is, so far as known, the largest in the world, being 108 feet long by 35 feet wide, is made in the shape of a pointed arch from glass which was manufactured for the purpose by the Chicago Window Glass Company. The glass of which this huge roof is composed, is known as "rough glass," and is three-eighths of an inch in thickness. Throughout the entire building are wires and pipes for the Johnson system of heat regulation put in by the Chicago Electric Service Company, so that by application to this company, any office or suite of offices can be supplied with automatic temperature regulation at a nominal rental for the apparatus. This company also applied their system to the ventilators in the skylight over the large central court of the

building, so that they will open or close automatically, according to the temperature of the court, or can be operated by touching a convenient button. The mosaic and marble work was supplied, laid and fixed by Burke & Co., whose offices are in this building. The plumbing work was done by E. Baggot, 169 and 171 Adams street, proprietor of the celebrated Durham system of house drainage. Meacham & Wright, furnished the five thousand barrels of Utica cement, which was largely used in the construction of the inner walls, and the greater part of the interior cemented work, of which there is a large quantity in the building. Dickinson Bros. & King furnished the Portland cement used in the actual construction of the foundation and walls. Two thousand five hundred barrels were used in the foundation alone, and four thousand Milwaukee barrels were used in the laying of the terra cotta in the construction of the walls and placing of the marble. The steam-heating apparatus of the building was furnished and put in place by F. W. Land & Co. It is the largest apparatus of the kind hitherto erected in the West. When it is remembered that the steam is distributed from the attic, and that every one of the hall and offices in the building has a radiator with its attendant pipes, some idea may be formed of the quantity of material required to construct the apparatus. The nine huge boilers which supply the steam for the various engines of this building were made and put in place by Mohr & Son. These boilers are made of Otis steel, and are cast in two parts or shells which are then joined. This firm is the only one in the city which is capable of making boilers in this manner, which is now conceded the best way of constructing them.

Every inch of the iron used in the construction of the building is covered with porous fireproofing, furnished by the Illinois Terra Cotta Lumber Company. This company put into the interior of the building about eight thousand tons of porous terra cotta, at a cost of about \$75,000. It is used in the partition, floor-arches and column covering, rendering the structure absolutely impregnable to fire. The artistic manner in which the work of fire proofing is done has called forth the highest praise from builders and visitors. There is nothing clumsy or heavy about it. The iron joists which support the floor are flat-arched, with terra cotta work, which, in addition to making a noiseless ceiling, forms a span between the walls as solid as if carved out of granite. Sound cannot penetrate from one floor to another, and the entire absence of vibration is due in great part to the firmness with which the floor, resting upon these flat arches, is supported. All the columns, other than those of an ornamental character, are encased in porous terra cotta, so that they are entirely insulated, as it were, and could not by any possibility be exposed to the heat of a conflagration, were one possible inside this building. The thirteen stories of balcony guards and stair rails, with their bronzed top rails, the cages of the eight elevators, and all the stairs are of iron, furnished, as well as all other ornamental iron work in the building, by the Winslow Brothers' company. The chaste and beautiful designs were made and patterns executed especially for this building, and they are harmonious throughout. The artistic effect of this ornamental iron work is chiefly due to the appropriateness of the designs and the first-class workmanship exhibited, all the work throughout the building being finished in either Duplex Electro

Bronze Plating, or the Bower Barff rustless process. The Duplex system of plating is one of the recent inventions of the Winslows. Hall's Safe & Lock Company has furnished the vault work for the building. This firm is the largest manufactory of this kind in the world, and their work is used in all the first-class buildings. The firm of P. & F. Corbin furnished all the hardware, such as hinges, knobs, escutcheons, locks and the like, which were used in the building. The patterns made from designs especially for this building, carry out the general design of the interior ornamental copper work. The eight immense tanks which are used for storing the water used in running the elevators, and for other purposes, were made in the building by G. L. McGregor & Co. The electrical apparatus for this huge structure was supplied by the Mather Electric Company. The Link Belt Machinery Company erected the rope transmission plant for driving the dynamos which supply the electric light for the building. These two dynamos, each of which supplies a current which feeds three hundred electric lights, are driven by two Corliss engines of one hundred and fifty horse power each, driving independent jack shafts. The sheaves that drive the dynamos are provided with disk friction clutches, and either of the dynamos can be operated independently of the other. The Link Belt Company has also supplied this building with an ingenious labor-saving device, which will commend itself to all who have the management of great office buildings, a device for supplying the furnaces with coal automatically, and for automatically removing ashes and cinders, and conveying them to the alley. In the equipment of the boilers, the Murphy automatic smokeless furnace was used. By means of the Cutler United States chute, a tenant in any part of the building—from the highest to the lowest story—may mail his letters without leaving the story in which his office is located. This chute is erected by special authorization of the postoffice department, in connection with the United States collection service. A large quantity of pipe for steam heating purposes was used in this building. It was necessary that the pipes should be perfectly insulated from the adjacent walls, as well as the atmosphere, by being covered by some material which is absolutely fire proof, and non-heat conducting. For this purpose the magnesia sectional pipe covering was used, furnished by Alfred G. Kemper. One of the corporations connected with the construction of this building was that which provided accident insurance for the workmen. This was the Employers' Liability Assurance Corporation. Acknowledging the liability of accidents to workmen engaged in the construction of such a large edifice, the contractors and owners of this building wisely and humanely procured a policy from the above named corporation, by which any workman engaged in the construction, while on duty, was entitled to compensation equal to two-thirds his weekly wages, while disabled. The policy also provided a liberal amount in event of death, or accident which resulted in the loss of limbs or sight, and premium was a certain percentage of the wages paid. No names of workmen or contractors were taken into consideration, so that every man who was employed, whether for a day or until the completion of the structure, was protected by the policy. Fortunately there were but few men injured in the erection of this large building, but all claims arising from injuries were promptly met and cheerfully paid by the Assurance Corporation.

The Chamber of Commerce presents nearly all the features of the new Commercial style and construction. The walls carry themselves, as in the Monadnock, and in this it varies from the majority of the modern houses, where the walls are carried, for ornament and shelter by the network of iron columns, girts and braces. The steel chimney, as in the Fair, was scarcely thought of when the Chamber of Commerce was completed, and certainly not in January, 1889, when the work of jackscrews commenced. In the matter of light and live air it is superior to all other buildings, and in strength, equipment and decoration equal to any of them except the Auditorium.

McVicker's theatre was reconstructed in 1871, at an expense of \$93,000, but in less than fifty days after its completion the great fire carried it away. It was rebuilt in 1871-2, reconstructed and decorated in 1885 and destroyed by fire August 26, 1890. This theater was reconstructed in 1890-91 by a company formed to control and manage it with a capital of half a million dollars. The rebuilding of the theater was committed to Adler & Sullivan, and from their hands a structure worthy of the position which it occupies came forth. The theater is rebuilt according to the most approved methods of fireproof construction. The audience room is spanned by six heavy steel trusses, and over these trusses are built two stories of offices, connected with the business building in front. Each of the six trusses is supported at the ends by latticed wrought-steel columns, which rise directly from the foundations and independently of the walls. Thus no weight is thrown upon the old outer walls which are retained solely for shelter. It is an axiom of modern construction that no building can be called fireproof in which any structural iron or steel work is left exposed to the action of flames. Every individual piece therefore of the steel construction surmounting the audience room is encased in porous terra cotta tile, and the floors, ceilings, roofs, and partitions are built of the same material. Twenty-four offices are included within this new structure, and an additional elevator is placed in the front building to serve them. These offices are very well lighted, and are fitted with all modern conveniences. In the redesign of the interior of the theater, the main floor, balcony and gallery are kept substantially as before in shape, but all else is of a new and beautiful design. The arrangements for heating, lighting and ventilating are very complete, and an opera chair of novel design and mechanism is used. The reconstruction and equipment of the scene-house is very complete. The rigging loft is raised to a height of seventy feet above the stage. All of the former scenery and properties were consumed in the fire, and a new and complete line was made by the best artists, references to which are made in the chapter on painters and decorators.

The Leiter building, fronting on State, Van Buren and Congress streets, is at once the fulfillment of a prophecy made only a few years ago and a testimonial to Chicago enterprise. In July, 1889, the hand of progress pointed to the erection of a great commercial temple, the plans of which, by W. L. B. Jenney, were then accepted by the owner, Levi Z. Leiter. Work was at once entered upon, the great foundations were set, and in 1891 a giant structure, instructive and healthy to look at, lightsome and airy, while substantial, was added to the great houses of a great city. A Commercial pile, in a style undreamed of when Buonaroti erected

the greatest temple of Christian Rome, was dedicated to commerce in 1891. The building fronts four hundred and two feet on State street and one hundred and forty-four feet on Van Buren and on Congress, with an alley along the entire rear. It is eight stories high, exclusive of basement, its height being one hundred and thirty-three feet and four inches above the sidewalk. Across the alley, nearly opposite the center of the building and fronting on Wabash avenue, there is to be a twelve-story building, now in course of construction, in the deep basement of which will be located all the boilers and machinery, so as to leave the entire basement of the main building free for business purposes. The construction of this house is entirely of iron and steel. All the weights, both walls and floors, are carried, story by story, on columns to the foundations. It is the skeleton construction now generally known as "the Chicago construction." It is exceedingly substantial, rendering the building proof against cyclones and earthquakes, and well adapted to a general business. The stories are high and airy, the large plate-glass windows only separated by fire-proofed metal columns. The exterior of the building is the light, warm grey granite of the Maine & New Hampshire Granite Company, from the Kearsarge mountains, near North Conway, New Hampshire. It is smooth-dressed and presents a very handsome appearance. The building is arranged to be used as a whole for one great establishment or to be divided into nine or a less number of stores, as tenants may desire. It is also arranged so that any story can be let independently and be conveniently reached by elevators and staircases from State street. It has been constructed with the same science and all the careful inspection and superintendence that would be used in the construction of a steel railroad bridge of the first order. The construction of the building was under the personal supervision of Charles Busby, whose reputation for ability and honesty is well known by every one. The location is one that will now become a second great retail center. Situated on the most important retail thoroughfare and at the terminus or loop of the South Side elevated railroad, within easy reach of the Illinois Central railroad suburban station, the Dearborn station, the Rock Island station, several lines of cable and horse cars and the great cable line of the south side, its facilities are unrivaled. This great structure, which is to be one of the finest store buildings in the world, is provided with every convenience procurable, and the workmanship throughout is of the very highest order. Pains and expense have not been spared that could in any way contribute to the advantage of the tenants or to the substantial character of the edifice, it being the intention to make this one of the greatest business monuments of the city. The building was designed by W. L. B. Jenney, architect, of this city. The severely plain exterior is grand in its proportions. Great corner piers of granite, carried upward to a chaste cornice, the central piers of the same material, the beautifully capped capitals dividing the windows, the carved granite cornice, all are in perfect accord with the Commercial style, neither wanting nor in excess of what such a style demands. Designed for space, light, ventilation and security, the Leiter building meets the object sought in every particular. The steel chimney of the Leiter building is constructed on the same plan as that of the Fair. It is two hundred feet high and ten feet and two inches in exterior diameter, or nine inches more than that of the Fair, affording an

escape for the smoke from the furnaces of nine seventy-two-inch boilers, each twenty feet long.

The Altgeld building, on the southwest corner of Market and Van Buren streets, was completed in the spring of 1890, beyond the southwestern limits of the wholesale district. Men well versed in Chicago building values looked aghast at Altgeld's venture, and shook their heads, as did the late John Wentworth and Isaac B. Arnold in 1882, when they saw the carpenters and masons at work within and without the old limits. This new building claimed tenants for one hundred and thirty thousand, out of its total of one hundred and ninety thousand, square feet of floor space, before May, 1890, and proved the faith of the owner in this section of Chicago to be well founded.

In May, 1890, an eight-story office building was designed by Bauman & Cady, to be erected at 123 and 125 La Salle street, the area being 25x100 feet. It is built of pressed brick, terra cotta and iron, with bay windows of brick, and as nearly fireproof as possible. The interior finish is of hardwood, marble wainscoting in all the halls, hardwood floors, two elevators, electric light, steam heat, plate glass and the latest improvements; cost, \$80,000.

In June, 1891, the Wolf building, 91 Dearborn street, was designed by Clinton J. Warren, for Louis Wolf. It is an eight-story office building, with front of buff-colored pressed brick, and terra cotta facings of the same color, modern in interior finish, with mosaic floors and wainscoted walls, erected at a cost of \$150,000.

L. J. McCormick's building, 65 to 73 Dearborn, on the southeast corner of Randolph, occupies the site of the heavy stone building erected there some years ago. The new house was designed in June, 1889, by J. C. Warren, as a sixteen-story building, to cost \$600,000, fronting one hundred and three feet on Dearborn and eighty feet on Randolph. The walls are of pressed brick, with stone base and large hollow steel pillars of great girth and strength. There are handsome stone trimmings, ornamental, galvanized iron stairs and ten passenger and freight elevators. The building is provided throughout with steam heat, electricity and every convenience. The interior finish is of the finest description, with composition roof, hardwood, brass work, tile floors and mantels. There are provided fireproof vaults, fire escapes and every requirement of safety.

The seven-story building on the west side of Franklin street near Washington street was designed in March, 1889, for warehouse purposes, by J. J. Kouhn. The building is 50x147 feet, with first story of rock-faced Carbondale brown stone and the six upper stories of brown pressed brick and terra cotta. The interior is fireproof construction work.

In April, 1889, the great manufacturing concern on Ellsworth street between Polk and Sebor, extending west three hundred and seventy feet to the Chicago, Burlington & Quincy railroad and over Mather street, was designed. The structure is fourteen stories high, excepting a small portion which extends upward but nine stories. The exterior is of pressed brick with stone and terra cotta dressings; the walls are made unusually thick and strong. The interior construction is of iron and the block as a whole and in detail is as fireproof, solid and lasting as brick, stone, iron and tile can make it. Power for the whole manufacturing busi-

ness is furnished by powerful Corliss engines. Steam-heating service, electric-lighting apparatus and modern ventilating and plumbing systems are in use.

The Western Electric company's building, 227-257 S. Clinton street, is also a modern industrial house. In 1890 an addition was erected after plans by Treat & Foltz.

Havlin's theater, on Wabash avenue south of Eighteenth street, occupies the site of an old church building. Built a few years ago after modern ideas, it presents a great Romanesque arch in stone, with tourettes or bartizans in brick and terra cotta, varying only in details of front from the Haymarket on West Madison street.

The George Lehman & Son's building, on the northwest corner of Jackson and Canal streets, was commenced in August, 1889, after plans by Marble & Lamson. This shows a frontage of pressed brick trimmed with stone and terra cotta.

The large Pythian hall, on North Clark street, is 157x196 feet. Iron, stone, brick and terra cotta are used in the exterior construction, iron for the interior and slate for roof. It has several tower projections of terra cotta, which, in connection with the broad, arched entrances, windows and ornamental work, give it an attractive and imposing appearance. The basement contains a drill room for the Knights of Pythias, barber shop, bath rooms and closets. Stores occupy the ground floor. The second floor is used for theatrical purposes, the auditorium being 100x196 feet in size, thirty-seven feet high, with large stage and a gallery in horseshoe form. The latest systems of fireproofing and sanitary plumbing were introduced, and the whole \$200,000 building was completed after plans by J. J. Kouhn, made in June, 1890.

The Chicago Cold Storage Exchange warehouse, on West Lake street, is a direct departure from conventional methods. The building comprises two ten-story sections, affording three large stores, each seventy-six feet deep, fronting on Lake street, and twenty brokers' and commission offices, thirty-five feet deep, on the first floor above. The east building is 70x382 feet; west building, 85x382 feet; Water street arcade, 75x382 feet; Cold Storage place arcade, 36x382 feet; building, 10 stories; height above river level, 127 feet; total number of square feet available for offices, 20,628; total number of square feet available for stores, 95,590; total cubic contents of building, 6,659,622 cubic feet; frontage on Lake street, 225 feet; frontage on Randolph street, 225 feet; frontage on Chicago river and dockage, 382 feet; frontage on Cold Storage place, 382 feet; combined frontage of buildings on West Water street arcade, 764 feet; combined frontage of buildings on West Water street and side trackage operated by six leading railways, 764 feet; total, 3,124 feet, making over one-half mile of frontage available for shipping and receiving; total capacity available for storage purposes, 3,000,000 cubic feet. There will be 850,000 feet of pipe used, and the total capacity of boiler and machinery plant, 1,600 horse power. Capacity of refrigerating plant equivalent to 600 tons of melting ice per day and 200 tons of pure crystal ice. The estimated cost of the entire plant and buildings to cover all the property lying between West Lake and West Randolph streets, on both sides of West Water street to Cold Storage place, including the viaduct and arcade over West Water street, and the purchase, according to the terms of the

lease, of the old warehouse (then operating under the lease and valued at \$140,000), according to Adler & Sullivan's estimate, was \$1,390,000. The Osborne Engineering Company's estimate on steam plant, elevating and electric service, refrigerating and ice plant, \$475,000; total, \$1,865,000. A produce exchange hall in connection with the warehouses, is equipped with all the latest conveniences for the use of the trade. This is composed of iron and glass, and so located as to command a view of West Water street arcade from end to end. The arcade is 75 feet wide, and extends between the warehouses for 382 feet, from West Lake to West Randolph streets. In May, 1891, six per cent 10-20 gold bonds, to the amount of \$1,000,000, were floated, and in July, 1891, the property was purchased by an English syndicate.

Maller's warehouse, on the southeast corner of Quincy and Market streets, was designed in June, 1891, by Flanders & Zimmerman. The building is a ten-story one with a front of forty-two feet on Market street and one of one hundred and fourteen feet on Quincy street. The architects provided for a thorough system of fireproofing, heat, light and ventilation. The estimated cost is \$150,000.

The Benjamin Machine Company's block or combination shop, warehouse and apartment building, extending from State to Dearborn and from Thirty-fourth to Thirty-fifth streets, was designed by J. H. Wagner in June, 1890. The idea of this combination building is Chicagoan, and the plans show a structure of brick, stone and iron, architectural in every line without the least indication of the great machine shop in the basement existing.

The Price factory building on Illinois street, fifty feet west of Cass street, was designed by Thomas Hawkes, in April, 1891. A feature of this new industrial house is the steel front and mill construction. The size is 50x100 feet, six stories and basement high. Elevators and steam heat also distinguish it from similar buildings erected only a few years ago.

In April, 1891, plans were completed and work commenced on the \$1,000,000 plant which Fraser & Chalmers, the manufacturers of mining machinery, erected at Twelfth and Rockwell streets. The site of this establishment covers five hundred and fifty thousand eight hundred square feet, or over twelve acres, and lies between Fillmore and Twelfth streets on the north and south and Rockwell street and Fairfield avenue on the east and west. The plans provide for twelve buildings to cover over eight acres. The estimated cost of the entire plant, including equipment, is over \$1,000,000. It is intended to erect only four buildings—the foundry, pattern storage building, boiler shop and power house at present.

Plans for the Grant locomotive works (Cicero) were completed in May, 1891. A sketch of the proposed works shows the buildings grouped along Robinson avenue. Opposite Fourteenth street is the two-story brick office building. The shops are one-story high, of truss construction. The buildings will represent an outlay of \$450,000, and the estimated cost of the complete plant is \$800,000. The works will have railroad communication with two roads.

In December, 1888, plans for the quarter-million-bushel grain-storage elevator and boiler-house of the Gottfried Brewing Company, were made by Griesser & Moritzen. The structure is brick and iron; but the great smoke stack is its remarkable feature, being of greater

hight than any other in the city at that time. Its foundation, twelve feet beneath the surface is thirty feet square; at the surface, sixteen feet square, and at the top, two hundred and fifty feet above ground, nine and a half feet in diameter. This immense chimney is square for thirty feet above ground, octagonal for double that hight, and then circular to the top. The chimney of the North Clark street cable power-house is about two hundred feet high, and that of the sugar refinery near Polk street and the river, two hundred and forty feet. The modern electric-light powerhouses have introduced the era of modern smokestacks. Grieser & Moritzen designed the Fisher Brewing Company's buildings on Dudley and Robey streets in March, 1890. In June, 1890, the first pale ale brewery in Chicago was designed for the corner of Thirty-fifth street and Stewart avenue. It is two hundred feet square, six stories high, constructed of brick, stone and iron, and cost about \$175,000.

Pulawski is the name of a new Polish hall and theater on Ashland avenue near Eighteenth street, built in 1891. The building, 72x130, three stories high, cost \$50,000, and was paid for by twelve Polish societies. The first story is of Bedford stone, the upper stories of pressed brick. Stained-glass windows impart a classical style to the whole interior, while the galvanized roof adds to the general appearance. The interior finish is rich if not elaborate. The hall is 60x70 in clear; its hight is thirty feet between floor and ceiling, with galleries encircling the entire interior midway. The stage is thirty feet wide by thirty deep. Three large main entrances and several minor ones amply provide for speedy exit in case of fire. A high slate tower surmounts the roof, in which a chimes clock strikes every hour. The seating capacity is about 1,200. Iron and steel beams and trusses are in use.

In 1891 the North Side Turngemeinde considered the question of building a \$200,000 structure on La Salle avenue and Wells street, to take the place of the Turner hall, 255 North Clark street, erected in 1872, which took the place of the building of 1863, destroyed in the great fire.

The Pontiac is a fourteen-story Commercial building, square from the foundations upward. Next to the Monadnock-Kearsarge, it is the most severe of the "sky-scrapers." Built on the principle of Chicago construction, it is a thing of light and strength, without any pretensions to beauty. The two gigantic bays, one each side of a tolerable bay, spring from orbels on the level of the third floor, or the ceiling of the entresol, and extend to the level of the fourteenth floor. It is gigantic, but full of light, yet wild as the chief after whom it is named.

The Alhambra, a Moresque or alhambresque building, on State street, Archer avenue, Follansbee place and Twentieth street, was designed by G. O. Garnsey in March, 1889, and completed in January, 1891, for the owner, A. J. Cooper. A theater to meet the wants of the class of people tributary to that location was desired for a long time, and in this building they have one. The store and flat block is "L" shaped with a frontage of seventy feet on Archer avenue, two hundred and ninety-three feet on State street, one hundred and fifty-one feet on Twentieth street and fifty feet on Follansbee place. The ground floor contains twelve stores and one flat. Each of the other three stories is divided into ten flats. The interior of these

apartments is furnished with steam heat, electric light, marble mantels, and every modern convenience. The theater building covers the space inside the L and fronts on Archer avenue. A twenty-one foot alley at the side, and a sixteen-foot alley at the rear, separate this building from the store and flat block. The theater is of Moorish style and measures eighty-three feet on Archer avenue, one hundred and sixty feet on Follansbee place, seventy feet on rear and two hundred and four feet on side alley. The audience room proper is one hundred and fourteen feet deep and about seventy feet wide. The parquette and dress circle seat five hundred and ninety-six, the balcony four hundred and twenty-four, and the gallery five hundred and forty. The proscenium arch is forty feet high and thirty-two feet wide, and the stage forty feet deep. The highest point of the dome is fifty-eight feet above the floor. The lobby measures ninety feet in depth, and above it is located the theater offices and four flats. Brick, stone, iron, copper and galvanized iron form the exterior. On the southeast corner of the site of this great \$200,000 improvement there was a substantial four-story brick building, which was remodeled to correspond with the plans. With this exception the remainder of the site was occupied by unsightly cabins.

The Monon is one of the greatest office buildings on Dearborn street. That it presents many of the features common to the other great buildings in its district, that it is high and huge, lightsome, fireproof, strong as a mountain, capacious, and built for use rather than ornament, is all that may be written of it.

The United States Appraiser's building, on Harrison and Sherman streets, was completed in August, 1891, by L. L. Leech & Son, the contractors, who began work in April, 1889. May 27, 1886, was the date when an act permitting the sale of the south half of block eighty-seven, known as the Bridewell lot, for \$205,000, made possible the erection of the new building. August 6, 1888, an additional \$200,000 was appropriated and the original designs for the building completed. The first plans, drawn by Freret, found little favor with the local appraiser's office. Freret was a Southerner and had designed for the Treasury Department many of the public buildings in the Southern states. His plans called for one story of brown stone, and the structure was to be completed with mani-colored brick. There were red, white, blue, yellow, green, and terra cotta colored brick all to be used in lines and layers with an effect supposed to be highly artistic. Only the foundations and first story were built on Freret's plans, and not a variegated brick found its way into Chicago. The late secretary Windom tore up the plans for the startling brick building and ordered architect Kirch to draw new plans making the entire exterior of brown stone. These plans, with the detail by Supervising Architect N. E. Bell, are followed in the present structure. The building stands eight stories or one hundred and twenty-five feet above basement in height, and covers an area of 70x90 feet. On both street fronts there is a vacant space of forty feet on each side of the building. The material used throughout is Connecticut brown stone from the Middlesex quarries. The inside copings are of cut Bedford stone, and the building approaches, with the interior driveways, are constructed of granolite. Every window is equipped with rolling steel shutters. The heating plant is the new double system of low pressure, return circulation, steam heating

and ventilating. The one passenger and two freight elevators are of the newest and most improved pattern, and are run by a separate steam plant. A third room in the basement is set apart for the dynamos and engine of the incandescent light plant. The three boilers and three pumps with the hydraulic machinery for the elevators occupy rooms opening into one through iron brick arches. Throughout the building there are no studwalls, and all interior partitionment and flooring are on a basis of hollow fireproof tiling. Everything that goes to make up the composite parts of the structure is fireproof. Between the floors are broad iron staircases with ornamentations in hammered brass. The wainscotings are in polished quarter-sawn oak. Imported tilings laid in Portland cement form the flooring for the halls and areaways in the office stories of the building. The arrangement for receiving goods is in every way perfect. Teams can drive in through a handsome brick archway on Harrison street; the goods are received at the Sherman street wareroom and the teams drive out at Sherman street. The roadway along which the teams are driven is made of granolite, with high curbing, running the entire distance, of rounded, cut granite. At twelve-foot intervals along the roadway electric lights burn. The first, second, third and fourth floors are fitted up for the appraiser, with his assistants, storekeepers, inspectors, clerks, etc. The four general appraisers have separate offices in the second floor. The fifth is the examining floor, and the remainder of the building is apportioned among tenants, and some of the federal officers. Before it was completed it was found to be too small for the purposes of a United States appraiser's building. Within five years the trade of Chicago had outgrown the calculations of Congress and the Treasury Department.

The new Herald building, as designed by Burnham & Root, in May, 1890, is a stone and terra cotta structure, 60x181½ feet, six stories in height, and adapted perfectly to the requirements of a great daily journal. The interior finish shows marble wainscoting and architectural iron work of the first order. Fireproof material for floors, partition walls and columns characterize the whole building. This structure stands on the site of the old City National bank building (154-158 Washington street), erected in 1872, which was one of the elegant commercial houses of that period. In the sale of the lot for \$190,000 that old-time house was not considered. The *Herald* office is an original mixture of modern building ideas. Romanesque below and almost Flemish above, it betrays the race of its designers after originality. Even the aeroteria varies from all precedents, for it stands out from the apex of the gable, supported by a boultel or mimic bartizan. Above is the great bronze herald, cast in Chicago, memorializing the growth of local industry in its manufacture here, as well as pointing out the material advances of journalism in the success of the *Herald*.

The Rand-McNally building, fronting on Adams and Quincy streets, stands on 100x165 feet, leased by that firm from Marshall Field in 1888, and a fifty-foot strip on the west leased from C. De Wolf. The nine-story building was erected in 1889-90, after plans by Burnham & Root. The first three stories are of brown stone, and the upper stories of pressed brick and terra cotta. Rand, McNally & Co.'s printing plant occupies the space above the third floor, while the lower floors are rented as offices or stores. Light is secured in the interior

by a court 60x66 feet, with a skylight at the second story covering the space used by Rand, McNally & Co. for a countingroom. Mosaic work is very fine, and in all respects the building is a monument to progress in the building arts as well as to the owners' enterprise. The height above the sidewalk is 148 feet. It is the pioneer of steel-constructed buildings in Chicago, and one of the first where the cantilever system was applied to party walls.

The old Central Union block, located on the northwest corner of Madison and Market streets, was torn down in May, 1890, to make room for the large store and office building of the Central Union Building Company. Architect L. G. Hallberg prepared the plans. The new structure fronts 185 feet on Madison street and 200 on Market, and has a depth of seventy feet. It rises six stories high above the basement, has fronts of Indiana pressed brick, with stone trimmings and iron store fronts. The windows are plate and ground glass, and the roof gravel. With the exception of the northwest corner of the building, which is occupied as a warehouse, the whole ground floor is used for stores of different sizes. The stores nearest the bridge run a hundred feet back to the warehouse, and the others, seventy and eighty feet deep, run back to an open court in the center of the building. The second and third floors are occupied by offices and sample showrooms, while the remaining three floors are used for light manufacturing purposes. All are supplied with steam-power. The building is made as nearly fireproof as possible, with partitions of hollow tile and iron columns all through. It has marble wainscoting in the first two stories, and marble floors in the hall and lavatories. The elevator service consists of four passenger and three freight elevators. The building is lighted by gas and electricity and heated by steam.

The Wisconsin Central depot, on the corner of Harrison street and Fifth avenue, was commenced August 16, 1889, after plans by S. S. Beman, and completed in October, 1890. The building, with its grand waiting-room and its train shed, can be counted among the extraordinary things of the West. The company which planned that depot had every sort and condition of men in their mind, and they all were provided for. Everybody, from the president of the road, down to the most miserable immigrant, has a suitable place set aside for him. The elegance of the waitingroom, with its massive pillars, its frescoes, its stained-glass windows, its electric lights and its fountains, ought to satisfy even the most fastidious. An open fireplace, with old-fashioned andirons, elegantly furnished rooms for ladies, and numberless easy chairs, are a few of the things provided for the comfort of the traveling public.

It is not the ordinary traveler who causes the railroad companies the most trouble. They all get along well enough, can manage to get their trains, if the caller yells loud enough, and they all can take care of themselves pretty well. The immigrants come under a different head altogether, and the accommodations for their comfort are omitted in many depots. The immigrant who has just passed through Castle Garden, New York, carrying all sorts of latent diseases in his clothes and about his person can sit alongside of anybody in the world at many large stations, but not so at the Wisconsin Central depot. At the extreme end of the Fifth avenue side is a door opening on a flight of stairs. Up one flight is a long room, well

lighted and heated and with all the conveniences, set apart exclusively for immigrants. There are many depots that pass as first-class, that have not half the accommodations this one room will possess when it is finished. Mary Svorack may have a letter from her brother in Sweden that he is coming to see her, and get naturalized as soon as he has been up in the Auditorium tower and around town a bit. She will go and meet him, and it is in this room where she will find him. Perhaps he is taking a bath in the bathroom provided for the use of the immigrants. And this bathroom! A place where the dust of travel, and perhaps the dust of years gone by, can be taken off at the expense of the railway company is not to be found in every railway depot. Attendants, with brushes, coarse and fine, soap galore, towels, water and tubs will be ever ready to give the homeseeker a good send-off before he tackles the "woolly West." Such a temptation to cleanliness may have the effect to increase the republican vote in Dakota in an indirect way. The train containing the immigrants can be pulled up to the entrance, its cargo unloaded, and another taken on without any of its passengers rubbing against the travelers of the first-class, and a waitingroom for mothers with children is located in the basement. At one end is an open fireplace, there are several small tables, plenty of chairs, a wash room, and here she will be permitted to stay as long as she wishes. The waiting-room will be relieved of another burden, and she will be relieved of the inconveniences of cramped quarters on a hard seat.

The waitingroom is designed to handle large crowds, and the exits to the train sheds are large, as are the doors leading to the street. The pillars are of the same material as those in the Auditorium hotel—seagliola—an imitation of Mexican onyx. The windows are each surmounted by a half-circle of colored glass, and incandescient lights are arranged over the arches and around the pillars. A mezzanine floor at the south end of the waitingroom is reserved for the purposes of a restaurant. It is reached by broad marble steps, ascending on either side of the passageway leading to the baggage room. The room is spacious and well lighted, and commands a good view of the waitingroom. The kitchen and servingroom are connected. The storerooms are in the basement, easily reached by an elevator.

The ticket office is as commodious as any office in the country. It is of brown Tennessee marble, and occupies the northwest corner of the room. There is no woodwork about it externally, the three windows having marble sills and polished brass gratings. Inside is an inner room, a place for the clerical force, and up above, a storeroom for records and documents, reached by a spiral staircase.

The baggage room is on the Fifth avenue side, long and narrow, one side opening onto a platform, where baggage cars will be unloaded, and the other right onto the street. Eight large doors are calculated to be enough to admit all the baggage, and the systematic arrangement in the apportionment of doors for different classes of baggage will expedite matters. A room under the south end of the baggage room is to be used for unclaimed baggage, and a large elevator will do the service of transferring the unclaimed trunks down below, where they will stay until they are called for. On the Harrison street side, which has a frontage of some two hundred and fifty feet, is the entrance to the elevators and three large archways

into the carriage court. This place is paved with a composition called granolithic, made of Portland cement and crushed granite. Omnibuses, cabs and private carriages can drive into this court and be entirely under cover. It is large enough to accommodate a reasonable number of vehicles. Signs will be displayed showing the routes of the transfers, and the cabmen will be there to do the rest. A traveler who strays through the gate in the fence that separates the court from the train shed will have no difficulty in finding a way to get to a hotel or private house. As soon as one cab is filled, its place will be taken by the next one, and an endless line will always be on hand ready for business. The train shed is truly a large affair, and if not in the world, is the largest train shed in the United States, with, perhaps, the exception of the New York Central depot. It is like a huge tent or a conservatory. The span is one hundred and fifty-six feet, the keystone seventy-eight feet, from the ground, and the entire length is five hundred and fifty-five feet, capable of taking in the longest vestibule train. The company prides itself on the fact that it is not like other train sheds, dark as Egypt, even in day time, but that it is light and airy. Wherever it is available, glass is used in the roof, until the inclosed space is almost as light as it is on the street. Six tracks are under the arch, and three on the east side next to the baggage room. The only ways that wood is used under the entire shed are as stringers under the tracks, a piece not much larger than a 2x4 scantling. Between the track is this granolithic composition, concave, so as to allow the water to be drained off. A fancy iron fencing incloses the tracks, as in other modern depots.

The main building, at the corner, consists of six stories and a mezzanine. At the intersection of Harrison street and Fifth avenue, so as to split the main building, rises the great slender tower, ten stories high and twenty-eight feet square. The exact height of the clock tower is two hundred and twenty-two and one-half feet, and the gilded ball on the flagstaff which crowns this pillar-like structure looks far away to the naked eye from the sidewalk. Two stories from the top of the tower is the great clock, which will strike the hours upon a five thousand-pound bell on the next floor above. The foundations under the tower are unusually massive, being forty-five feet square, and two hundred and twenty-five pounds to the square foot. The material used in the construction of the tower, the main building, and the three-story wings which flank each end of the main building is of Connecticut brown stone, brown pressed brick, terra cotta, Tennessee marble, granite and iron. Fireproofing is used throughout, and the little hardwood which finishes off the various interior parts is antique oak. The entrance to the office portion of the building and the waiting room on the corner is under three stone arches, fourteen feet high, richly carved and embellished with two small highly polished granite pillars. There is a solid marble vestibule between the main building entrance and the three elevators which run to the offices. The total frontage on Harrison street is two hundred and sixty-eight feet. The office building on Fifth avenue extends two hundred and seventy-eight feet, and immediately south are the baggage rooms, express company's quarters, etc.

In February, 1890, plans for the fourteen-story fireproof store and hotel building on the

northeast corner of Jackson and Dearborn streets, were made by Burnham & Root, and before the close of April, 1891, this immense \$1,000,000 pile of terra cotta, brick and iron, was constructed, fourteen stories high, over an area of 100x165 feet. The marble finish, interior decoration and six elevators were added during the summer, and in May, 1891, the name Northern Hotel Company was adopted by the owners, and the "Chicago" adopted as the name of the building. It is proof against fire, and so strongly is this point emphasized, a blaze may fill one apartment without injuring its neighbors. The numerous bays, round and angular, extend from the level of the second floor to the top of the thirteenth story; the second story becomes an entresol in the southwest quarter of the building, and the windows of the fourteenth story differ from those of the second to the thirteenth stories, being in fact a series of narrow rectangular openings, wanting only in arches to become an arcade. It presents more ornamental features than a first look would credit it, and in this, as well as in its enclosed iron exterior, it varies from its severe neighbor on the southwest corner of the streets named. There is an attic story on the Chicago, the line of demarkation being the terra cotta cornice on the level of the fourteenth floor. The entablature is an ornamental miniature of the Egyptian cornice of the Monadnock-Kearsarge.

The Boston store warehouse on the east side of State street near Fifteenth street, was erected by contractor Connolly, in the summer of 1891. The great rock foundations rest on layers of T iron imbedded in concrete. The exterior walls are in heavy masonry, the Bedford stone piers in the first story indicating the strength of such masonry. The interior is carried upward on heavy cast columns, and on these rest the great wooden beams which carry the heavy joists. This building is 80x161 feet in area, and six stories in height. It is one of the great improvements made on State street during the year; the Weil buildings and the large number of rock-faced stone and flat buildings being the other representatives of progress north of Fifty-fifth street. South of the boulevard many fine blocks were erected in 1890-91, and the great buildings for the northeast corner of State and Fifty-fifth streets, and for State street and Cloud court were projected.

In June, 1889, the permit for the sixteen-story Aldis building, known as the Monadnock-Kearsarge, on Jackson and Dearborn streets, was issued on plans presented by Burnham & Root, the stated cost being \$600,000. It is a gigantic structure without ornament, save the Egyptian cornice, but with great bays resting on corbels at the second floor level, ascending to within one story of the top. Its great walls and steel interior make it a link between the iron pier buildings of the present and the walled structures of the past. The design of the architect was to be lavish in interior equipment, merely showing strength in the exterior, and in this he has succeeded.

In 1890 the location and plans of the Woman's Temperance Temple were adopted by the Directory, and the Marshall Field property, on the southwest corner of La Salle and Monroe streets was secured, the same where the heavy foundations were placed, in 1885, for his proposed wholesale house, but abandoned, owing to party-wall troubles. In 1891 work on the new plans, by Burnham & Root, commenced. The building measures ninety-six feet on

Monroe street and one hundred and ninety feet on La Salle street, up to the second story, where it breaks off, and above that point measures one hundred and eighty feet. The thirteen stories, including the steep roofs, rise to a height of one hundred and ninety-six and one-half feet. The first two stories are constructed of granite, while dark burned red brick (to harmonize with the stone) and terra cotta form the stories above. The roof is of slate, covering two great pavilions. The structure is in the shape of the letter H, with two courts sixty feet broad and thirty feet deep, one on La Salle street and the other facing the west. There is no lack of variety in the style, the fronts being relieved by handsome bays, capped with round turrets and other attractive features. Viewed from any point of the streets, its symmetrical proportions and beautiful design attract more attention than any other building of its class in the city. Its elegant main entrance on La Salle street, fifty-five feet wide, and another entrance for the Memorial hall, on Monroe street, are well designed. The interior is handsomely finished with marble wainscoting. The hall and entrance floors are laid in mosaic. Eight passenger elevators make access to the upper stories easy. The basement and first story are in heavy stone, the succeeding seven stories are carried in one to the projecting parapet, and there are three above this, including the attic, giving a beautiful effect and a skyline unequalled here in the great office buildings. Add to this the engaged round towers, springing from noble corbels in the first story, battlemented above the cornice and roofed in cone shape, then the great gabled dormers between the towers, the lantern, the hip roofs and the ornamental terra cotta trimmings, and you have a building worthy of the thirteenth century. The style employed is French Gothic on a Romanesque basis, wanting, of course, in the sculptures and carvings of the great French houses erected before the Renaissance.

The Manhattan, fronting on Dearborn street and Third avenue, south of Van Buren street, is the pioneer of the sixteen-story-and-basement buildings of Chicago, being 150x68 feet ground area and two hundred and four feet in height. It was designed in May, 1890, by W. L. B. Jenney for C. C. Heissen and completed in the summer of 1891. The architect applied to the Manhattan the perfected system, known as "the Chicago construction," first introduced by him in the Home Insurance building in 1884. This system enabled him to give to each square foot of surface its highest carrying capacity of three thousand pounds, while presenting a building giving the appearance of fourteen thousand pounds per square foot. The use of iron pillars, resting on heavy foundations of concrete and iron rails, rendered such a structure possible, for, were stone and brick used in quantity to support more than ten stories, a settlement would be inevitable. In the Manhattan, lying between party-walls, eight stories high at the north and south, on which no additional weight could be placed, the cantilever principal was employed. The floor weights of the north and south wings of the building, for nine stories in height, are carried by heavy fifteen-inch cantilever beams. The first row of columns, at either end of the building, being only fifteen feet from the party walls, no weights rest upon such walls. Thus, high engineering skill and the close calculations implied in such a term, mark the construction. Its architectural features are the double fronts, faced with gray granite to the fifth story and with light pressed-brick and

terra cotta to the sixteenth story. From the tenth story to the sixteenth the building sets back from the substructure fifteen feet on the north and south, showing glazed tile end walls, but holds its width east and west. The fact of its extension between two business streets afforded the architect an opportunity to give natural light to every room, and he took advantage of such opportunity. Copper bays, resting on corbels or artistic modillions, and extending from the third to the tenth story at each end and to the thirteenth story in the center, abolish the undressed appearance peculiar to extraordinarily high houses and give to the Manhattan an airy, lightsome look exteriorly, which the interior upholds. Bronze and antique copper embellishments, mosaic floors, ornamental ceilings, polished marble and jasper wainscoting, large stairways and all the belongings of a great modern building are found here. The basement is devoted to elevator, heating and electric light machinery and to mercantile uses. The first floor is given up to the grand entrances, corridors and stores. From the hall five swift elevators run to the top, a pneumatic tube connects it with the Board of Trade, the possibilities of fire have been conquered, and a tenant of the Manhattan may boast of advantages undreamed of by the emperors, kings and princelings of Europe.

The sixteen-story building on the Cobb lot may be credited to 1891, when the lot was leased for ninety-nine years to the Columbian Vault Company at a rental equal to the interest on a valuation of \$74 per square foot. This lot fronts 94.6 feet on Dearborn street, with a depth of 80.3 feet along Calhoun place. The terms of the lease under which the land has been secured are as follows: For the first year the land is to be rent-free; for the next two years the annual rental will be \$22,000; during the next three years the annual rental will be \$25,000, and for the balance of the term \$28,000. The building, as designed by the late John W. Root as his last work, cost \$750,000. The first and second stories are of quarry-faced or of bush-hammered stone, with an entrance thirty feet wide in the center. At the north and south limits of the building, but beginning at the third story, rise two slightly projecting curved bay windows, constructed of molded brick and climbing upward fourteen stories. At the fourteenth story these bays end in a balcony running across the front of the building, surmounted by a delicately carved stone balustrade. Above this are two stories, ending in a terra cotta cornice. In the center of the building and over the main entrance is a handsome octagonal bay window, extending to the sixth story and surmounted by a stone balustrade like that crowning the end bays. The piers to the windows between the end bays from the sixth to the fourteenth story are of highly ornamented terra cotta tracery. The building is of bridge construction on the cantilever plan. Only steel, terra cotta, brick and marble are used. No wood entered into its construction except for doors and window frames. The floors are laid in mosaic and the walls lined with white marble. There are thirty rooms on each floor, of ample size and well lighted.

Early in 1891 the property at 100 and 102 Washington street was sold to the Cook County Title Guarantee & Trust Co., at \$48 per square foot or \$525,000. With the twenty feet on the east, the lot was originally occupied by a Universalist church, having been obtained from the canal trustees. In 1856 Orrington W. Lunt, J. W. Waughop, and Gov.

Evans bought the property for \$32,000. The east twenty feet were sold in 1860 to Mr. Mason, and formed part of the lot on which the Mason building stood. Lunt held his forty feet since the original purchase, Waite bought out the Waughop interest in the west twenty feet, and had offices at this location for the past thirty years. In April, 1891, plans for the new building, by Henry I. Cobb, were presented, and preparations made to raze the old structure. The plans provide for a sixteen-story building, sixty feet wide, one hundred and eighty-three feet deep, and 210 feet high, to cost between \$600,000 and \$700,000. The first four stories in rock-faced stone, are Romanesque, the next nine stories are of brick and the three upper stories of brick and stone. The unpleasant effect caused by the great height of the building is overcome by band-course, heavy cornice and coping, which are in the upper three stories. The basement is entirely devoted to vaults. The main floor will be occupied by the officers of the abstract company and by a bank office in the front of the building. Two arched entrances open into the building, one into the abstract office and one directly into the bank. A light court, 60x65 feet, is one of its features. A service of six elevators will be established. Mosaic floors, marble wainscoting, and all the essentials of a modern office building will be introduced.

A west side building of 1891 is that of Arnold Bros., on the northeast corner of Randolph and Union streets. It has a frontage of thirty-eight feet on Randolph and one hundred and fifty-six feet on Union street. It is seven stories and basement high. The ground floor is one large store, with large plate-glass fronts on both Randolph and Union streets. There are handsome bay windows from the second story to the top on Randolph street, and also bay windows in the center over the main entrance on Union street. One freight and two large passenger elevators are placed in the building. The front construction is of iron and terra cotta, while the side upon Union street is of the best brown and terra cotta pressed brick. The building is modern in all its appointments. The cost of the structure is estimated at about \$80,000.

The Unity building, on the site of the Rice block, 75 to 81 Dearborn street, was commenced in May, 1891, after plans by J. C. Warren. Those plans provided for an office building of steel construction with a frontage of eighty feet on Dearborn street, by a depth of 120 feet. The building is faced with buff pressed brick, buff terra cotta and stone. Two bays extend up through the front of the building from the second to the eleventh story. The front above the eleventh story is plain and is surmounted by a terra cotta cornice. The interior finish includes mosaic floors and marble wainscoting. The building is furnished with eight elevators and an electric light plant, contains six hundred offices, exclusive of the offices on the first two floors. The main entrance is sixteen feet wide and twenty-four feet in height. The estimated cost of the building is between \$800,000 and \$1,000,000. The old Unity, torn down in June, 1891, occupied the site of the theater of 1851, built by John B. Rice. Ten years later it was remodeled into an office building, which fell in the fire of 1871. The new structure is the fourth which has occupied the corner of the alley between Madison and Washington streets, since the beginning of Chicago.

The Caxton block, 328-334 Dearborn street, was designed by Holabird & Roche, in 1889, for Bryan Lathrop and W. C. Reynolds and constructed by George A. Fuller. It is a twelve-story pressed brick and terra cotta building, fireproof throughout, fronting eighty feet on Dearborn street with a like frontage on Fourth avenue. On each front three bays extend from the third to the eleventh story. The second story is divided into offices of good height with broad plate-glass windows and of easy access from the street. The entrance and vestibule are on the street level and finished with marble wainscoting and encaustic tile. Two hydraulic passenger and one steam freight elevator, especially geared for high speed, are located at the south entrance, so as not to interfere with the occupancy of the building. Every beam, column and girder is of steel. The floors of the first story are on the street level. The fireproof vaults, mail chutes, steam heat, etc., low rate of insurance, perfect security against the destruction of valuable books, papers, etc., and losses from the interruption of business through fire are great advantages. The building was finished in 1890, at a cost of about \$250,000.

The Oxford building, 84 and 86 La Salle street, is the old L. J. McCormick building of 1872, reduced from Athens stone to light red brick and terra cotta. The old building was razed in September, 1890, except the two main walls, and an eight-story house, 125x42 feet in area, of one hundred and twenty-five rooms, was completed on its site in May, 1891, after plans by C. J. Warren, at a cost of \$200,000. The entresol is made a feature here, but owing to the grand Renaissance structure opposite and the fine old stone buildings each side, this feature is now more useful than ornamental.

The Como building shows the Romanesque entrance under heavy rock-faced arch, the second, third and fourth stories in one architectural story, the two bays and recessed triple square windows in the fifth and sixth stories, square windows in the seventh and an arcade in the eighth story, from the arches of which spring the frieze and cornice. Brown brick with brown-stone trimmings are shown in the facade.

The Central Market building, located on State street, just south of the river, is of interest, not only from the fact that it is of original construction and design, but also because it is the first modern step in establishing public markets in Chicago. This building, which was completed in June, 1891, covers an irregular L-shaped lot, fronting both on State and South Water streets. It has a main market entrance on State street and extends two hundred and twenty feet along the river. The eastern wall, extending from the river to South Water street, is one hundred and sixty-five feet long. The building has a frontage of one hundred and fourteen feet on South Water street. It covers in all twenty thousand square feet of land and is built of brick and stone. The floors, counters and fittings are almost exclusively of marble, iron and cement. The roof is chiefly of glass, with suitable means of ventilation, and the building is lighted by electricity. The main market floor is divided into stalls to be rented to retail merchants. Under each of these stalls are cold storage vaults in which supplies of all kinds may be kept. Over the South Water street extension there is also a cold storage warehouse, built on the most approved plans, for the purpose of preserving perishable articles for

the use of the market and its occupants. The entire construction was planned with an aim to use and handsome effect. The State street entrance, with its vestibule of white marble, was one of the latest designs of the late John W. Root. The gold and green glass mosaics in spandrels, made in Paris from his drawings, are the finest specimens of such work yet introduced here.

In June, 1891, work on the Doggett Brothers' building on the southeast corner of Harrison court and Wabash avenue, was commenced. The ground, 80x171 feet, was covered with venerable old-time frame houses, but their demolition to make way for a five-story stone front building, similar to the Kimball building, was a gracious act.

The A. J. Stone office building, erected in 1891 on the triangular piece of ground bounded by Madison street, Ashland and Ogden avenues, is the most ornamental office building in the west division, and one of the finest in the city, and, has street frontages on all sides, especially desirable for offices, on account of the direct outside light to every room. It has nine finished stories above the basement and cost \$175,000. It is as thoroughly fire-proof as possible to be made; the entire framework, from foundation to roof, being of steel, the outside walls, as well as the floors, being supported by steel columns and girders. All the interior and exterior columns above the third floor are composed of Z bars, the exterior columns below the third floor are box columns of plates and angles. Taken from an engineer's standpoint and considered structurally, the iron work of this peculiar shaped building is, without doubt, the most intricate ever put into an office building of its size. In the third story the corner columns disappear and the whole load of the three towers is supported by cantilever girders in the walls, from twenty-four to thirty-six feet in length, with the cantilever arms from nine to twelve feet long. On the eighth floor the columns again offset and in the ninth story the columns appear to be located entirely regardless of the ones below. There are fewer columns in the third story than in the second, and a good many of these are not in line with those below being offset several feet and resting on girders. C. G. Wade, the engineer, is the contractor for the main portion of this work on account of the failure of the original contractor.

The striking features of the upper part of this building are the three towers, eight dormers and gables, and the high mansard roof, covered with Spanish tile. This structure is a practical demonstration that an office building need not be shaped like a dry-goods box to be constructed of steel. The architect, Alfred Smith, designed this building for effect rather than to suit the convenience of the iron work, and by thus consigning the skeleton of the structure to a secondary place in his artistic conception he has so clothed it that all stiffness, so characteristic of steel buildings, disappears, and in its stead rise grace and repose. Incidentally, the construction of the iron work is rendered more difficult by the acute angles of the building, one of which is about forty-two degrees and the other about forty-eight degrees. A horizontal section through the upper stories would show over ninety per cent of the walls to be in the bays overhanging the columns, thereby causing a cantilever strain on the floor beams sufficient to allow the interior columns and certain floor beams to be made



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lighter than would have been required had the outside walls been directly over the columns. The two lower stories of this building are faced with brown Montello granite, with an imposing arched entrance of polished and carved granite on the Madison street front. Above these two stories and up to the roof the walls are faced with a rich dark brown terra cotta of beautiful design, made by the North-Western Terra Cotta Company. The basement floor is utilized for burglar and fireproof vaults, which are in connection with the safety deposit vaults located in the western half of the main or first floor. They contain five thousand boxes of the latest and most approved pattern and construction. The balance of this main floor is fitted up as Mr. Stone's private offices. The entire second story is one large banking room, and from this floor up to and including the ninth there are twelve fine offices in each story. The interior finish throughout the halls, entrance way and stairs in particular is in such a style as to surpass many of the most modern and finest office buildings in the city, being entirely of marble and Italian mosaic with real bronze trimmings. All glass is the finest polished plate and all woodwork of quarter-sawed white oak furnished by Badenoeh Brothers. Cesaire Gareau was the carpenter contractor for this magnificent structure.

The vaults are three in number: One in the basement for a trunk or storage vault; one on the first floor, which is a safe deposit vault, and one on the second floor to be used for banking purposes.

In the construction of these vaults Mr. Stone has made the matter of expense a minor consideration, simply seeking to get the best protection procurable. There were several designs and specifications submitted for his consideration by firms of vault builders, each claiming superiority for its work. After a careful comparison of the different claims set forth in the designs and specifications submitted, Mr. Stone decided to reject them all, and call in a professional architect and designer of this class of work, and the result is the magnificent piece of vault work now in the building.

The masonry of which the foundation consists is of the most substantial character, and so built as to preclude the possibility of settling. The walls are so constructed as to afford absolute protection against fire. But it is the burglar-proof qualities of these vaults which show masterful skill on the part of the designer and builder. Vault builders are unanimous in conceding Brooklyn chrome steel to be the best drill-proof metal made. A fact entirely worth considering is, that in all burglar-proof vaults constructed in Chicago in the past, the materials have consisted of what is known as "alternate plate work," or one-half steel and one-half iron, and this makes a fairly good vault. One of its chiefest merits, however, is cheapness, and as large vaults cost large sums of money, it has been customary to award the contracts of building vaults to the concern whose construction cost the less.

The vaults in this building are of a special design, consisting of five-ply Brooklyn chrome steel plates and angles. There being seven thicknesses of material, a thickness of four inches is obtained, thus effectually guarding against successful attacks with a drill; but the danger of the vault being drilled is not more to be feared than is that of stripping plates apart and making a manhole. To provide against this, these vaults have been built with a surface plate

one inch thick, giving great surface strength, and screw-holding power. The screws holding the plates together are inserted from the inside of the vault. The plates are put together from the outside toward the inside. The screws are located in staggered courses, so that no two screws are on a line with each other, and no screw passes through more than two plates. The screws being short, the heads of each series, after being countersunk, are backed up by the next course of plates. The outer plates of the work being one inch thick, as stated, the points of the first series of screws are covered by a thickness of metal, giving the entire outer surface an unbroken appearance.

It will be seen from this description of the construction, that if these plates are properly angled, and all caution used in the location of the joints of the plates and angles, that displacement of the plates by any stripping process is beyond the ingenuity of the "cracksmen," as well as beyond the desperation and anger of a mob, a contingency, by the way, which must be borne in mind and guarded against in the construction of burglar-proof vaults.

Particular attention has been given to the question of securing the doors of these vaults. The weak point of all vaults are the doors. Powerful explosives in both dry and liquid form can be and have been introduced into vaults considered burglar proof, by means of the hole in the doors through which the spindles pass. The doors of these vaults are solid, having no spindles, hence no chance to introduce explosives. The doors are of the same material and construction as the bodies, and accurately perfect in their fitting to the jambs, and forced into close contact therewith by a compound pressure obtained by a worm gear. The doors are all provided with automatic bolt motors of the most perfect and modern make. The five time locks used on the doors of the vaults each govern one of the bolt motors in such manner that, at the proper time, the bolts will move into position, locking the doors, and at the opening hour releasing the bolts, when the doors can be opened.

An idea of the capacity of the safe deposit vault can be formed when it is stated, that it contains 5,000 safe deposit boxes of various sizes, each box being furnished with a lock specially made by the Yale & Towne Manufacturing Company for this particular vault. The storage vault has the same cubic capacity as the safe deposit vault, and the bank vault is of sufficient size to accommodate any metropolitan banking institution.

H. A. Shourds, of Chicago, is the gentleman who designed the plans and made the specifications for these vaults. Mr. Stone exacted the right from all firms of vault builders to whom the specifications were submitted, of allowing Mr. Shourds the freedom of the factory securing the contract, during the construction of the work. The several factories were visited by Mr. Shourds, and a copy of the specifications left with each, and the bids for the work were forwarded to Mr. Stone. After carefully considering them all, the owner placed his order for the work with the Mosler Bank Safe Company of Cincinnati. Mr. Shourds was at their factory at intervals during the construction of the vaults, and personally superintended the tempering of the steel, and fitting of the different parts. On the arrival of the material at the building, he superintended the placing of the same in position, and the result is a lasting reference to Mr. Stone, the owner, the Mosler Bank Safe Company, the vault builders and Mr. Shourds, the vault architect and designer.

The armory of the Chicago Hussars was designed by C. M. Palmer, in 1891, and in April of that year the work of building was commenced. The lot has a frontage of one hundred feet on Thirty-fifth street, three hundred feet west of Cottage Grove avenue, and a depth of 231 feet. The building covers the entire lot and cost \$150,000. Its front, is of pressed brick, terra cotta, and rockface stone. The entrance is twenty feet in the clear, which is of sufficient width to admit a column of fours. The site was selected because of its nearness to Grand boulevard and the south side parks, so that the horses will not have to travel any great distance over the stone pavements before reaching the gravel bridle paths. The building has all the appointments of a first-class club, with cafes, reading rooms, officers' rooms, committee-rooms, banqueting halls, uniform rooms, and libraries. The banquet hall is on the third floor, and is 70x100 feet in size. Adjoining it are dressing and toilet rooms. On the ground floor and at the rear of the building are constructed one hundred box stalls for the horses of members of the troop. There are also saddlers' quarters with lockers for horse equipments.

The Sheridan club erected their house on the southwest corner of Michigan boulevard and Forty-first street, in 1891. The ground, 50x175 feet cost \$16,500, and on the two deep lots, a building 50x130 feet in area was constructed.

The plans for the Sons of New York clubhouse and theater were made in January, 1891. They show the fifth step in local architecture. The arching of the upper windows, below the attic story, the string-course corresponding with that of the sub-story, the moldings, as capitals or astragals of piers, set off the spring of the arches; while an ornamental panel, supported by iron columns, take the place of band-course work in two of the central stories.

The German theater, 103 to 109 Randolph street, was designed by Adler & Sullivan early in 1891. The building covers an area of 80x181 feet, is fourteen stories high, and cost \$600,000. The material for the exterior is a warm, light brown terra cotta. All of the ground floor, excepting two small stores, are occupied by a theater, which extends through six stories. Here it is covered with heavy steel trusses twenty-five feet in height, between and above which will be eight stories of rooms and halls. The theater itself contains one thousand three hundred seats. It, as well as the stage, is entirely fireproof in construction. There is in the building, above the stage, several rooms for a German down-town club of large membership, as also a restaurant, lectureroom and ballroom. In addition to these purposes the building will be used as a first-class hotel, conducted on the European plan, containing about one hundred and fifty guest rooms, of which fifty have private bathrooms. One of the peculiarities of the theater is that there is not within it a single pillar to obstruct the view of any one, either on the main floor or in the balcony or gallery. The entrance to the main floor of the theater is somewhat after the manner of the entrance to the Auditorium, that is, on two levels. The same method of reaching the gallery and balcony is pursued. By this means there are created for the use of those attending the theater, four foyers at the end of the theater, these being supplemented by corridors on the sides of the same, which

corridors are so arranged as to pass the stage and communicate directly with the alley in the rear of the building.

The finish of the entire building is in hardwood; halls and corridor floors throughout are of mosaic; walls of tile and marble; the structure in every way first-class. The foundation is on piles, above which are the ordinary modern foundation of concrete and steel beams. The framework of the entire structure is of steel pillars and steel beams, riveted together at all junctions. A peculiarity of the plan of the building is the lowering of the front in conjunction with the light courts of the same. The body is carried five stories higher than the front walls on the sides of the same. The purpose of this is to admit a profusion of south light into the courts, and thereby make every room in it an outside room. Four thousand incandescent lamps furnish the light, and every room is heated by a double radiation system of steam heating. The building has artificial ventilation furnished by seven fans driven by electric motors. Five hydraulic elevators are used in conjunction with broad stairways for the necessary communication between the different stories. The principal contracts for the German opera house were awarded June 10, 1891, as follows: Probst Construction company, mason work and fireproofing, for \$95,000; Binder & Seifert, iron works, for \$122,900; North-western Terra Cotta works, terra cotta, for \$74,188.

The Andrews building on Wabash avenue is a peculiar conception. There it stands, eighty feet front, one hundred and seventy-five feet in depth, and seven stories high. The seventh story is a wild Gothic and the parapet Venetian. The great bay or rounded center shows six windows in each story, with arcade work in the copper bands. Within is found a great light court, plenty of light and space and live air, each important and salutary; but it is questionable if life is endurable behind such a hideous facade, a front which is a veritable wilderness of wildness.

The Western Bank Note building on the southwest corner of Michigan avenue and Madison street, completed in June, 1891, is Romanesque in its entrance and eighth story. The great square windows of the first, the entresol, the four sets of rectangular windows between the six great piers of the third, fourth, fifth and sixth stories, and these repeated above the band, tell of the Commercial element in its style, which is further warranted by the grand bay between the central piers. The Chicago construction renders it safe and the interior finish elegant.

The Wheeler building, Nos. 6 and 8 Sherman street, is architectural. The first and second stories are Palladian and the seventh Romanesque, the Italian details being fairly brought out in red sandstone and pressed brick of the same color.

The Citizens' Brewing Company, which was organized early in 1891 with a capital stock of \$300,000, with John Sweeney, president; Thomas J. Nerney, secretary, and James Stenson, treasurer, began the erection of a brewing plant at the northeast corner of Archer avenue and Main street, to cost over \$200,000, in July, 1891. They purchased the ground for the site, being two hundred and seventy feet on Archer avenue and three hundred and nine feet on Main street, in May, from Joseph A. Brown for \$55,000. The brewing plant will consist of a

brew and malt house, ice machine and storehouse and other buildings, for which plans were prepared by August Maritzen.

Plans for the German brewery in the Bridgeport district were made in June, 1891. The main building covers an area of two hundred and eighty feet frontage, and is five stories high, with towers in the center and at each corner. The material is brick, with stone trimmings. All the other buildings necessary to a complete plant—elevators, malthouses, ice-houses and storehouses—are designed upon the most modern and approved basis. The beer vaults are constructed above ground, and may be kept at such a temperature as shall best conduce to improve the quality of the product.

The new sixteen-story Fair building, on State, Adams and Dearborn streets, sixteen stories in height, was designed in 1890 by W. L. B. Jenney, and the work of construction begun in March, 1891. The building is constructed in four or five sections, the first of these, 100x165 feet, is located at the northwest corner of the lot, fronting 100 feet on Dearborn street and 161 feet on the alley running east and west between Monroe and Adam streets, that is the northern boundary of the property. Construction is entirely of steel, fireproof material, such as terra cotta, hollow tiling and plate glass. The foundations are of railroad iron laid in concrete. This work was completed without disturbing the business of the Fair, except where the departments carried on in the northwest quarter had to be moved into the basement of the other three quarters, or crowded among the departments on the first floor of the east half or of the southwest quarter, and the subsequent transfers of goods to the completed sections. When work above the street level commenced, that portion of the old building involved was removed, and certain departments discontinued for a time. When two or three stories of the first section were completed, a temporary roof was put on and the Fair moved in. When one section was finished another was commenced, and so on until the entire site was improved. The work cost \$3,000,000. On July 6 the first and second floors of the northwest quarter of the building were finished and tenanted, and the work of tearing down the southwest quarter begun.

The steel chimney of the Fair is a novel feature in the economy of building, and, indeed, in the use of steel. It is 250 feet high, or seventy-five feet higher than that prince of chimneys at the Gottfried brewery, on Archer and Stewart avenues. As described in the *Economist*, the outside diameter is nine feet five inches, while the steel varies in thickness from five-thirty-seconds at the top to three-eighths of an inch at the bottom. The lower seventy-five feet of the chimney is lined with fire-brick eight inches deep, formed to fit the shell capacity all around. Above this it is lined with hollow tile. This lining is supported at intervals of twenty-five feet by angle iron riveted to the steel shell; in other words, the chimney is lined in a manner similar to blast furnaces and foundry cupolas, and no expansion by heat can lessen its strength. The joints are all hot riveted. The steel shell is carefully protected from corrosion, and from any attacks of the weather, by painting inside and out. The weight of the chimney is spread to the foundations in the same general way as that of the columns of the building, the base or foundation on which it rests being constructed in the

same manner. The ground is first covered with a layer of cement, then two layers of steel rails, in cement, and one layer of I-beams, on which the cast-iron shoe which takes the shell of the stack rests. The capacity of the chimney is twelve 60-inch boilers, twenty feet in length, and the cost about \$7,000.

The Newberry library building was designed by Henry I. Cobb in the summer of 1888, but the building contracts were not awarded until May, 1891, nor was the permit issued until June. The material selected is Massachusetts brown granite. The building is four stories, a basement and an attic story in height, fronting three hundred feet on Walton place. The estimated cost of this structure is \$300,000. The new building will constitute only the south wing of the quadrangular design of the complete structure; but it is calculated to meet the demands of the next twenty-five years and will have a capacity of four hundred thousand volumes. The drawings show a massive structure in the Romanesque order of architecture. In the main entrance on Walton place are three large and elaborately carved doorways. The third story is encircled with a row of panels bearing the names of famous men.

The Madison hall theater and office building on Madison street, looking north on Union street, was erected in 1890-91 by a company organized for that purpose; represented by Directors Thomas C. Mulehay, president; Henry J. Melendy, vice president; Joseph Wright, secretary, and Samuel Cohn, treasurer. The plans were made by Architect J. E. Scheller, and the work of construction entered upon early in the winter of 1890, the total estimate being a quarter million dollars. It is certainly one of the greatest, if not the greatest, building enterprises on the West Side, showing the observance of architectural design. It is an index to the spirit of the times, which shows the builders' enterprise spreading out in every direction and taking immense shapes in locations, which, a year ago did not claim extraordinary merit. As described in the company's prospectus, the first story presents a grand theater entrance, an entrance to offices, gallery entrance and four store fronts. The second story is an entresol, very ornamental; the third, fourth and fifth stories are compressed into one architectural story, by means of pilasters and arches; the sixth story shows large double square windows each side of the central pavilion, in which are five arched windows, and in the attic are five square windows in pedimental dormers. The spandrels in the fifth story and cornice at attic level show ornamental detail. Mahomedan, Romanesque and Gothic forms are all found in the Roman pressed brick, carved Bedford stone, iron and glass facade of the Madison Hall. The proposed theater, in rear, is to be 88x114 feet, thoroughly equipped and richly decorated.

The foundations of the front building are after the modern idea. The steel rail and bed of Portland cement are found there. The interior is carried upward on iron columns and steel beams. Iron shoes and fireproof floors and partitions tell of safety. One of the features of the first floor is the grand entrances, entirely separate, yet under one arch which riots in ornamental iron work and beveled-plate glass. The floor is twenty-three feet wide and inclines upward from grade two feet nine inches. In the office entrance are two Crane elevators of high speed, and each side of the central halls are two large stores. On the west store level is the gallery entrance, leading to the second floor. The second, third and half of the fourth



MADISON HALL.

MOHAMMEDAN, ROMANESQUE AND GOTHIC UNITED.

ORNAMENT OF SAME STYLES.

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floors are devoted to offices. In the other half of the fourth floor is a large room, 35x60 feet, exclusive of entrances, anterooms, wardrobes and offices. The fifth floor, which is seventeen feet high, contains the finest lodgerooms in the city. It is 40x60 feet, including a movable platform 15x30 feet. In connection with this are the committee rooms, wardrobes, anterooms, parlor and offices. The decorations in this hall were designed by the architect and executed in stereo relief stucco. They are extensive and magnificent. The other half of this floor contains the diningroom, kitchen, pantry, ladies' reception, refreshment and anterooms, with roberooms, ticket offices and lavatories for the grander pleasure hall on the floor above. This sixth floor embraces the entire area, 96x60 feet, including the stage 15x60, with ceiling thirty feet high, and a gallery, suspended from the trusses, with a seating capacity of about three hundred. The floor of this hall is highly polished, quartersawed maple. Clustered incandescent lights and chandeliers, and fair decorations are found in this fine auditorium. The two elevators terminate at the fifth floor, leaving the sixth floor uninterrupted. The roof is suspended by truss, and is covered with slate and gravel. The building is heated by steam from boilers placed in the open court, where live air is plentiful. Gas or incandescent light may be used, as electricity is supplied by the company's own power. In the basement is the elevator machinery and dynamos. The lighting and heating of the theater and office building is carried out on the most modern of systems. The superior decorations are from original designs by Mr. Scheller.

The Madison hall theater, 88x114 feet in area and five stories high, will be the second in size in Chicago. Leaving the central entrance through the office building, the court is entered and its roof of stained glass takes the eye. Entering the theater, the stage opening, which is forty feet wide and forty-eight feet high, wins attention. It is flanked on either side by eight boxes. First entering the open court are placed the exit gallery stairs, in a large foyer containing a large fireplace. On each side of the corners of this theater are silurian water fountains, divans, and the main staircases leading to the galleries entirely of iron. The height of the auditorium is sixty-five feet, showing three galleries. The seating capacity is two thousand five hundred and the overflow capacity three thousand five hundred persons, or half the total capacity of the Auditorium theater. The decorations are in oil colors, upon stucco and sheet metal work. The economy apparent in spacing and the beauty of this theater is excellent. It is constructed entirely of fireproof material, the floors of all the galleries being solid tile material. The drop-curtain is made of fireproof material, the boxes are tile and stucco. The stage is the best equipped and most convenient one that could be arranged, containing six principal dressingrooms on each side of the opening and twenty rooms in the basement. This basement is twelve feet high, which is the height of ceiling in each dressingroom, a minstrelroom, one large dressingroom and lavatories are under this stage. A greenroom, parlor, property, store and dressingrooms are on the stage floor. There are three fly-floors on either side of opening and one double paint bridge. The theater is lighted by two thousand lamps of various candle power. Fresh air is forced into the auditorium by means of fans, and the foul air is drawn into iron ducts and expelled. The three great exits form a feature of this house, the value of which cannot be over-estimated.

The World's Fair Relief company's building, on Wabash avenue and Peck court, was designed in April, 1891. It is two stories high, covering the entire lot and involving the expenditure of \$40,000. Its construction has some peculiar features, as it is built of iron, glass, and the composite material known as "staff." A twenty-foot arched entrance opens into the building from Wabash avenue. This entrance extends back sixty feet to the panorama proper. It is finished in panels of figurial and molded work, and round it hang valuable paintings. The frontage on Peck court, back twenty-four and a half feet, and the Wabash avenue frontage are devoted to stores and a cafe. The remainder of the main floor, 85x120 feet, is occupied by the panorama proper, which is arranged in the center of this space with raised floors on all sides for spectators. Jackson park, with its lakes, trees and fountains, and all the buildings, railways and towers are to be modeled on a scale of one-eighth of an inch to a foot. The work is done in metal, alabaster, and carton pierre. It is made entirely realistic. The lakes and fountains are modeled with metal and filled with water. Electric fountains are reproduced, buildings lighted from their interiors. Even the trees and shrubbery of the improved park find a place in the panorama.

The Chicago & South Side Rapid Transit Railroad Company, together with introducing a new system of railroad, also introduced a novel style of depot architecture. Up to December 13, 1890, the structure erected represents 8,196 lineal feet; weight of structure completed, 7,620,260 pounds; foundations constructed, 430; track completed, 6,141 feet. One hundred and fifty buildings were moved off right of way. The track is superior to any heretofore laid in this country, the rails being of first quality steel and weighing ninety pounds to the yard. The rails are connected with a joint, which gives the top of the rail an even surface for the tread of the wheels and prevents the clicking sound so frequently heard on surface roads as the wheel passes over the joint. The foundations are built of massive brick and stone masonry, averaging ten feet in depth below the surface and being not less than seven feet square at the bottom, giving a bearing surface of forty-nine square feet. On the date given the corner-stone of the first depot building on this road, Thirty-fifth street, was placed. A bronze plate sunk in the peachblow stone which formed the ceremonial corner-stone bore this inscription:

.....
 : C. & S. S. R. T. R. R. CO. :
 : C. GODDARD, PRESIDENT. :
 : R. I. SLOAN, CHIEF ENGINEER. :
 : M. M'DERMOTT, BUILDER. :
 : DEC. 13, 1890. :
 :

The stations are located on the ground directly under the girders carrying the tracks, one building answering for passengers going either way. This is an original improvement on the eastern roads. By this plan a great saving in the number of buildings on the entire line and in the expense of maintaining them is obtained with absolute benefit. The front of the station facing on the street is of Roman brick and peachblow stone, with terra-cotta trimmings, and roof of red slate. There is a news stand in an alcove off the waitingroom, and

an enameled tile wainscoting, four feet high, runs round the waitingroom, corridors and toilet rooms. The ceilings are of Georgia pine, with the rafters exposed. The exits and entrances are kept separate, the passengers leaving the trains not having to pass through the waiting-rooms. The incoming passengers pass up the stairway to a covered landing in the rear of the station, running across and below the track and passing to the north or south as the passengers wish to go. These covered platforms run on each side of the track for a length of two hundred feet. It is on this platform that the incoming are separated from the outgoing passengers by the separate exits and entrances. As the company owns the ground upon which the structure is built it is able to introduce this new feature of stations on the ground, making them more sightly, durable and convenient.

The great freight clearing house is a project credited to 1891. A group of one hundred and fifty six-story buildings, with a clearing house in the center, will occupy the one-quarter-mile tract, fronting on the river, south of Twelfth street. The plans outline houses as ultra-Commercial in style, as the idea of such a commodity exchange suggests.

Tattersall's house was established here in 1891, when the half block or 362x152 feet, on the east side of Dearborn street between Sixteenth and Seventeenth streets was secured. This entire tract will be covered by a substantial three-story block to be devoted to the same uses as the London house. The ground floor is to be utilized for horse sales and for a riding school for gentlemen. It also will be suitable for exhibitions of various kinds. Accommodations for hundreds of horses will be on the floor above, while the topmost story is available for storage room. The architecture will be plain, to correspond with the uses to which the structure will be put. Perhaps its most novel feature will be the show track on the first floor, running the full length of the building and thirty feet wide, so that customers may see the full speed capacity of their prospective purchases.

The Chicago Natatorium, on Milwaukee avenue near Division street, is at once a commercial, a flat and natatorium building, three stories and basement in height, constructed of pressed brick and blue Bedford stone. It has a frontage of fifty-two feet, with a depth of one hundred feet. The ground floor is used as one large store, the other floors as offices and lodge rooms. There is a handsome arcade, thirteen feet wide, with tiling and marble wainscoting, leading from the street to the natatorium proper, which is triangular in shape. This is divided into two large compartments, one for ladies and children and the other for men. Both basins are built of stone and concrete.

The buildings of the Western Wheel Works Company, on Sigel street, near Wells street were designed in 1891 by Henry Sierks. The main building has a frontage of one hundred and sixty-eight feet on Sigel street and a depth of one hundred and fourteen feet. It is five stories high, with a front of pressed brick and stone. In the rear is a one-story blacksmith shop, 79x120 feet, also constructed of brick; the cost of the entire plant is \$80,000.

In July, 1890, an office building was designed for Francis Bartlett to cost \$400,000, to be erected at 265 to 271 Dearborn street. The material is stone, brick and terra cotta for the exterior and steel for the interior; the size, 73x72 feet, sixteen stories high. Swift running

elevators, steam heating, electric lighting, fireproof construction, and good light for every office are the recommendations. Work on the foundations was begun in June, 1891.

The Allen building, on the northwest corner of Monroe and Canal streets, was erected in 1891, at a cost of \$250,000. The site was for years known as "Allen's tannery." The new structure is 160x180 feet in area, eight stories high, and strictly fireproof—stone, brick, tile and iron being the materials used. It is a Commercial house, wanting in ornament.

In June, 1891, plans for the Cole building, on the southwest corner of Jackson street and Fifth avenue were perfected by H. B. Seeley. This house, of brick and terra cotta, shows a frontage of eighty-eight feet on Fifth avenue and one hundred and sixty feet on Jackson street.

The Blair five-story building, on the site of the old house (262-264 Wabash avenue), designed in 1891 by Burling & Whitehouse, is 40x175 feet. The facade presents much ornamental work in brick, stone and iron.

The Inter Ocean building on the northwest corner of Madison and Dearborn, erected in 1889-90, is a house of stone and iron, seven stories in height, well lighted and equipped. The corner lot 20x40 feet, which cost \$150,000 or \$7,500, per front foot, was increased to 100x70 feet, the Inter Ocean Company purchasing sixty feet on Madison and fifty feet on Dearborn street running back ninety-five feet to Calhoun place with the buildings thereon. The corner pavilion or tower is seven stories, and the fronts of the main building six stories, with attic and basement. The two bays in the Madison street front of the pavilion and one in the Dearborn street front, with the pretentious blind arcade forming the parapet and heavy corner pier, convey an impression of the Commercial style, and this impression is emphasized by the first story. Above this, with the exception of the fifth story, the arched keystone window of the Palladian style rules. The clock-tower, with its steep hip-roof, almost a steeple, singles out this building from its fellows in the block.

The remodeling of the old buildings on the southeast corner of State and Madison streets, as planned by Adler & Sullivan, will give a building worthy of that corner. The firm of Schlesinger & Mayer, having secured two hundred feet frontage on State street, south from the corner, resolved to change the various facades into one eight-story building, similar in style to the corner building. The main floors will extend from Madison street south of the south end of the building, without a partition wall. A grand entrance will be made at the south end through the fronts of the buildings now secured.

In May, 1891, plans were completed for the reconstruction of the six-story house on Quincy street, just east of the Temple Court block, into a first-class office building for its owner, Frank Bort, at an expense of \$150,000. The building was used for years as a glass warehouse. It has a frontage of sixty-nine feet and is eighty feet deep. An entirely new front of Roman brick was put in and two stories added. The portico is in the Italian style and displays some excellent points.

The five-story Schloesser block, situated at the northwest corner of La Salle and Adams streets, erected in 1872-3, was remodeled and greatly improved and three stories



THE MASONIC TEMPLE.

COMMERCIAL ARCHITECTURE.

ROMANESQUE AND GOTHIC ORNAMENT.

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added in 1891. In addition to this the entrance was lowered so as to be on a level with the sidewalk, the same as the McCormick block, and an extra elevator added. This makes the building almost as tall as its neighbors on the opposite corners of the street, the Home Insurance building, the Rookery and the Insurance exchange, and renders the corner of La Salle and Adams streets pre-eminently the corner of high buildings, as the four corners are occupied by houses, none of which is less than nine stories high. The old Chamber of Commerce, raised to a height of one hundred and ninety-eight feet, is a street wonder.

In July, 1891, the Oriental building, one of the great office blocks of La Salle street, was leased for ninety-nine years by a syndicate. The land on which it stands has a frontage of seventy-eight feet on La Salle street, and extends along the south side of the alley for one hundred and twenty feet. The rear of the lot is irregular, as it lacks a strip 26x40 feet at the southwest corner. The lessees propose to raze this five-story house and erect on the site a \$500,000 fourteen-story modern structure after plans by Adler & Sullivan.

The remodeling of the Freer five-story block on the northwest corner of Randolph street and Fifth avenue was carried out in 1891, when two stories were added and the interior modernized.

The question of tearing down the old Ashland block, erected in 1872, at a cost of \$200,000, was considered in February, 1890, when A. J. Alexander purchased that property for \$500,000. The land formed a part of the J. K. Kingsbury lots, bought in 1834, at \$60 per front foot, or \$4,800. His daughter, Mrs. Buekner, inherited it, and only in 1891 did the property come out of the lawyers' hands. In May, 1891, the permit for the new Ashland block was granted, and the material of the old building sold to E. J. Hopson, to be used in the hotel building on the southeast corner of Michigan avenue and Twelfth streets. The block, unlike most of those built just after the fire, was constructed of the best materials and was as solid, in May, 1891, as it was nineteen years ago. The partition walls were of brick clear to the roof, and there was not a check or crack to be found anywhere in the plastering. The plans for the new Ashland were prepared by D. H. Burnham. It has a frontage of one hundred and forty feet on Clark street by eighty feet on Randolph street, sixteen stories high, of steel construction, and thoroughly fireproof. The building is faced with light gray stone, brick and terra cotta. The main entrance, on Clark street, is twenty-one feet wide, the windows of the lower stories are arched at the third story. From the third story seven bays extend up through both fronts to the sixteenth story. The building is surmounted by a full Corinthian cornice. All the exterior details are classical. The main entrance and the entrance from Randolph street open on a vestibule which is floored with mosaic and finished in marble. Seven elevators are arranged in a semicircle, with a provision for adding two elevators to this service. The building contains three hundred and fifty offices above the bank floor. A light court 28x56 feet, extends through the rear of the building.

Work on the Masonic Temple was begun in January, 1891. It is twenty stories (two hundred and seventy-four feet) high, including basement and attic, has one hundred and ninety feet frontage on both streets, and is as nearly fireproof as modern art can make it. The cost of

the building is estimated at \$2,000,000, making the total investment, including the land, about \$3,100,000. This great work was undertaken with the purpose of giving the Masons of this city a mammoth lodge room at a nominal rental. This is secured by a number of ingenious business devices. The cost was assumed by a syndicate of Masons, at the head of whom was the late Norman T. Gassette. In the basement is a cafe, finished in onyx, alabaster and plate glass, large enough to seat 2,000 people. On the ground floor, opening from the grand rotunda are waiting and toilet rooms for lady visitors. Fourteen elevators, ranged in a circle round the rotunda, carry people up and down, making the trip to the top floor, including stops, in about five minutes. Three of these elevators are of the "express" order, and make through trips to the top story. On the roof is a handsome summer concert garden, fitted up with shrubbery, walks, flower beds and fountains. As an instance of its solidity and the desire of the projectors of the enterprise to make the work of the best possible nature, it may be stated that the cost of construction is about thirty-five cents a cubic foot. The best constructed and most expensive building previously erected in Chicago is the Rookery, the cost of which was thirty-one cents a cubical foot. The Masonic Temple is a solid steel frame, with outside facings of brown pressed brick and terra cotta, and interior columns and beams enclosed in fireproof material. The vertical is given prominence in the west and south facades, but the first story is Romanesque, and, though the voisseurs are Roman, the roof belongs to that style. From the level of the fifth floor, twelve stories are carried on immense pilasters, bearing arches over the windows of the sixteenth floor. The great bays, springing from corbels in the first story above the arches of the mezzanine story or entresol, extend to the level of the sixteenth floor, but do not for a moment disguise the pilasters which only receive the arches a point above. The seventeenth story shows the double square window, the eighteenth, Venetian windows, and the attic, dormers between the gables or pediments of the pavilions. Those gables are richly decorated, showing some of the chateau designs of the thirteenth century in alto relievo work.

The Smyth building, erected in 1891 on the site of his six-story business block, destroyed in the fire of April 12, 1891, is one of the great modern Commercial houses. John M. Smyth instructed his architect, William Strippelman, to draw plans for an eight-story-and-basement business building covering the entire ground, two hundred and five feet front on West Madison street, east of Halsted street, by a depth of one hundred and eighty feet to School street. The building is designed in the Romanesque style of architecture, the front being of blue Bedford stone entirely. Eleven massive carved-stone piers in the first story carry the weight of the remaining seven upper stories. The three center piers projecting out from the main building line receive two large arches highly carved, forming the only and grand entrances. The plate glass used is the largest size ever used in Chicago, there being eight lights, 120x196 inches each, with ornamental electro-bronze-set beveled transoms overhead. The grand vestibule, 12x40 feet, is finished in marble and mosaic. The center part of building, one room 120x125 feet, contains the main office, vaults, two passenger elevators and two grand stairways; toilet rooms for customers and employes and lockers for all employes are conveniently located



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on each floor. The east and west wings being 40x180 feet each, and being divided by fire walls from the center portion, but connected by large fireproof door openings, form a court in the rear of center part, which is covered with an iron truss glass roof, under which the shipping is done. Four freight elevators are facing directly on this court. The fireproof boiler-room, 30x40x24 feet, located at the rear end of the east wing, contains two Heine Safety boilers of five hundred horse power. The electric plant room adjoins the boiler-room, 40x70 feet, and contains a fully equipped plant for electric lighting, furnished by the Chicago Edison Company, to light two hundred arc and six hundred incandescent lamps. The building is heated by steam in the most approved manner. The first, second and third floors are at present used for sale or show rooms, and are finished in Georgia pine. The mode of construction is what is commonly called "mill construction," long-leaf southern pine and iron being used exclusively. The floors are four inches thick, the finishing floor being of a fine quality of white maple. The foundations, consisting of best quality of concrete, are made sufficiently strong to carry several more stories. The actual floor area of the entire house is about seven acres.

The central depot of the South Side Rapid Transit Railroad is to be in keeping with their road and local depots. In May, 1891, this railroad company decided upon the erection of a seven-story building on the grounds adjacent to and directly in the rear of the Leiter building, on Van Buren street. The new passenger depot, when built, will occupy similar space. Though disconnected from the Leiter building, it will appear as an integral part of that magnificent structure. But little is known as to details, those immediately interested appearing rather reticent as to their intentions. It is known, however, that the building will be creditable in design and finish and fitted up with all modern conveniences for the speedy transaction of business.

Many other buildings for the central business district are projected. Of the total many will be carried to completion. The reports of remodeling are even more numerous than those of new building projects, so that the future promises, for the business center at least, blocks of houses from eight to eighteen stories in height.

The first housemoving recorded was made in December, 1833, when a house erected on the southwest corner of Lake and Clark streets was hauled down Lake street by some angry members of the First Presbyterian society. It appears the society had purchased this lot, No. 1, block 34, on which to erect a church, but one winter's night a new citizen raised the frame of a storehouse thereon and the following day attached the siding or clapboards. The next night a number of men, oxen and chains were seen in front of the new house and instantly the chains were attached to the sills and the oxen to the chains. The house began to move, and, early the second morning, the owner found it near the fort on No Man's land. The workers of the night did not dream of jack screws or rollers. They left the hauling to the oxen and contented themselves with directing the movements of the dumb brutes. Six years later the house mover was a regular institution here. Henry Bailey and Chester Tupper had an office at 46 Dearborn street; John Boes established himself at the corner of River

and South Water street, and Noyes Oakes on Clark street. In 1843 John Robinson established himself as a house-mover. Some time after the tower of the water works of 1852-3, one hundred and thirty-six feet square, was completed and the water introduced into the stand pipe, its settlement was observed. Although the foundation sprung from a compact bed of sand, six feet below the original surface of the ground where the water-works building of the present stands, the soil was still compressible enough to yield to extraordinary weight, for in a short time the tower leaned forward fourteen inches, but the house-raiser had then established himself here, and the leaning tower of Chicago was made straight again.

Prior to June 6, 1883, house-moving on the owner's premises was carried on generally without a permit. On the date given an ordinance was passed providing for house-moving; but the thirty-five professional house-movers opposed it so effectually that the Department of Public Works resorted to stringent measures and heavy fines to bring non-observers of the ordinance to terms. From June 6 to December 31 that year permits were issued to move three hundred and fifty-seven frame and seventeen brick houses, representing a frontage of seven thousand three hundred and forty-three feet. Prior to the transfer of this business to the street department, or from January 1 to June 6, 1883, there were only two hundred and sixty-five permits issued. The raising of the Marine bank block was one of the extraordinary feats of the house-mover, being nothing less than the uplifting of ten buildings simultaneously, without damage to either one, by Hollingsworth & Coughlans.

In 1889 the property at the southeast corner of State and Twelfth streets was condemned for city purposes, and the large four-story stone-front building, one hundred and fifteen feet frontage, had to be torn down or moved to make way for the new viaduct. The latter course was adopted, and it stands to-day fifty feet south of its original north line. A three-story building, 58x59 feet, fronting on Twelfth street, was moved seventy-four feet south and seventy-eight feet west, and a two-story barn, 63x113 feet, on Twelfth street, was moved two hundred and fifty feet south. The contractors were Hollingsworth & Coughlans; the architect, Alfred Smith, and the contractor for mason work, John Griffiths. The total cost of moving was about \$13,000, and of mason work, in building new foundation, walls, etc., about \$12,000. One pane of glass was broken by a workman, so that the building was pushed south without the slightest injury.

In 1849 Henry Bailey was an established house-mover, with home and office on Edina place, between Jackson and Van Buren streets. Richard Lappin resided on Chicago avenue and Wolcott streets, and Patrick McCally "boarded round." The grade established by the city in 1855 made it necessary to build stone walls around each block to retain the filling of the streets. These walls, under the outer edge of sidewalks, are known as curb-walls. Temporary sidewalks of plank were arranged on these walls, with rude stairs leading down to the stores. The public square had to be elevated to grade by earth dredged from the river, but as the jail was in the basement of the 164x132-foot courthouse, a circular area wall one hundred and eighty feet in diameter was built to give air and light to the prisoners. This wall was raised three feet above grade, was coped with heavy cut stone, from

which sprung a heavy iron railing. With this improvement the system of house-raising and house-moving was inaugurated. The Tremont house, a brick structure 160x180 feet, was raised eight feet to grade, five hundred men and five thousand serews being engaged in the work. This work was successfully accomplished, and may be said to be the introduction to the elevation or removal of the large buildings. In 1857 James Brown, of Boston, and John Coughlan contracted to raise the J. D. Jennings' store building, on the northeast corner of Dearborn and Randolph streets. Two years after an entire block of heavy buildings, forming the north side of Lake street, between Clark and La Salle streets, was raised; the whole block, raised simultaneously, was moved to State and Twelfth streets.

Mr. Walshe, now residing on Ogden avenue, near Randolph street, was here at an early date. The house-movers in 1859 were Sam. B. Abbott, 299 South Halsted street; Henry Bailey, 22 Edina Place; Ed. F. Bosley, 117 West Washington street, now residing in Chicago; Brown & Hollingsworth, 71 Adams street; Cook & Chamberlin, 198 Milwaukee avenue; James Crowe, 154 North Peoria street, now of Crowe & Sons; J. & J. Gleason, 149 Harrison street; Richard Lappin, 315 Chicago avenue; William P. Lappin, 327 Chicago avenue, and John McIntyre, 248 Ohio street, now residing in Chicago. The firm of E. G. Hall & Co., 190 Washington street, dealt in jack-serews.

Friestadt & Son may be named among the old house-movers; but amid them all the Coughlans have accomplished the greatest work. Among the houses moved or raised may be named the Briggs, Tremont, the iron front on the southeast corner of Lake and Fifth avenue, the old armory, on the southwest corner of Adams and Franklin streets, raised a few days before the fire; the east side of State street, from Twelfth street to Thirty-ninth; a part of the Studebaker was raised in 1891; St. Patrick's church and Hotel Dieu, at New Orleans, were restored, and throughout the country remarkable work was accomplished.

The house-movers and raisers in 1879 were Joseph Bauer, Jacob Beeker, Peter Beucher, A. Bjornson, E. F. Bosley, Peter Brost, William Brown, James Crowe, Michael Crowe, William Dunlap, Hans Feltman, Aug. Hinzs, Hollingsworth & Coughlans, J. Jaman, Charles Krueger, Nicholas Kuhn, Matthias Martin, Robert McAuley, William Neimann, D. Pagel, Thomas Phillips, H. J. Sheeler and William Starkey.

Notwithstanding the perfection arrived at by the regular house-movers, some novel, exciting and disastrous failures are recorded. The attempt at moving the two-story frame house, 158 West Van Buren street, on February 1, 1891, was practically a failure. The building was leased by Simon King, eighty years old. He occupied the first floor of the house, and with his wife managed to make a living by doing laundry work. Mr. King sublet to Richard Ott, an employe of the City Storage Company. Mr. Ott occupied the second floor with his wife, a baby one month old, and his wife's brother and sister. Early in the afternoon of the day named the house-mover and five Swede workmen began to dig beneath the building. Mr. King protested, and the feeble old man was compelled to retire to the house in order to escape a thrashing. Mr. Ott demanded to see Nichols' permit, but was told to mind his own business. At two o'clock every one in the building was startled by a loud,

cracking sound. Pictures fell from the walls, and the furniture slid from one side of the building to the other. Mr. King's stove was overturned, and the pipe fell to the floor. Clothes which were drying close at hand caught fire, and for a moment it looked as if the building would be destroyed. Mrs. King caught up a tub of water and dashed it on the blaze. The building swayed and trembled, the windows were broken, and great cracks appeared in the walls. It was prevented from toppling over by a large brick building on the east side, against which it fell. Nichols saw the danger and yelled to his men: "Jack her up on the other side!" The men rushed to the east side of the building and began to turn the screws. They worked with might and main, and in their desire to save the building from toppling to the east they turned the screws too far, and with another loud crack the structure raised in an upright position for a moment and then fell toward the west. Terribly frightened, Mrs. Ott rushed to the front door. The steps leading to the street had been removed, and she fell eight feet to the ground below. At this juncture Burke arrived, accompanied by Officer Carpenter of the Pinkerton agency. Carpenter made some inquiries, but Nichols refused to recognize his authority, so, after carrying Mr. King back into the house, he went away. Nichols ordered his men to proceed. Officer Ross arrived on the scene shortly after six o'clock, and asked Nichols to show him his permit. Nichols claimed that he had left it at home, and when the officer insisted upon seeing it or stopping his work, he used such abusive language that he was arrested.

In 1873 the Western Union Telegraph Company erected a high building in New York City, which suggested the consolidation of capital toward the construction of others. In 1882 the idea was carried westward, and the Montauk building resulted. Writing in April, 1891, to the *Tribune*, the following statement was made in discussing the relation of building syndicates to leased grounds and "skyscrapers:"

"There is a class of valuable securities growing up in Chicago which has already become of great interest and importance. From present indications its importance is to be enhanced rapidly. These securities are the stocks and bonds of building companies erecting large buildings for offices or other purposes. The stock issued by such companies already aggregates over \$15,000,000, and the bonds more than one-third that amount. With an aggregate capitalization so great as that, the security that such investment offers becomes a matter of wide interest. The issuing of bonds secured by a building standing upon leased ground is a comparatively recent scheme in financing. A few years ago investors said that such a security was at best based on nothing firmer than fire-insurance, and the plan was not regarded with favor. There has been progress in the methods of building since then. Buildings are now put up that are about as substantial as the ground they stand upon, and offer as good a basis for security. A list of the principal building companies in Chicago, with the amount of their stock and bonds outstanding, is given as follows:

	Stock.	Bonds.
Commercial Safe Deposit Co.....	\$300,000	\$
Commerce Vault Co.....	200,000	75,000
Chicago Deposit Vault Co.....	600,000	200,000
Central Safety Deposit Co.....	1,000,000	600,000
Tacoma Safety Deposit Co.....	1,500,000	500,000
Northwestern Safe & Trust Co.....	250,000	175,000
National Safe Deposit Co.....	500,000	.....
Imperial Building Co.....	300,000	100,000
Merchants' Safe Deposit Co.....	50,000	.....
Union Cold Storage & Warehouse Co.....	300,000	100,000
Abstract Safety Vault Co.....	150,000	100,000
Central Music Hall Co.....	180,000	.....
Chamber of Commerce Safety Deposit Co.....	700,000	650,000
Chicago Warehouse & Manufacturing Co.....	125,000	125,000
Chicago Opera House Co.....	350,000	250,000
Chicago Auditorium Association.....	2,000,000	900,000
Citizens' Bank Vault Co.....	50,000	.....
Central Market Co.....	200,000	100,000
Traders' Safe & Trust Co.....	300,000	100,000
Masonic Temple Association.....	2,000,000	1,500,000
Cook County Abstract Co.....	1,500,000	.....
Chicago Cold Storage Exchange.....	3,000,000	1,000,000
Total.....	\$15,555,000	\$6,475,000

“These companies have had a varied history, but, as a rule, they are now decidedly prosperous. There are but few exceptions in the way of non-dividend payers. In some cases the property has proved remarkably remunerative, and dividends of such high rates are paid that the stock is looked up by investors, and has no quotable market value. The stock of several of the above companies is owned by a few men, the corporation being a close one, amounting practically to a partnership. A few of the stocks are listed on the exchange, but they are not an active trading security. The bonds are mostly quoted at about par. They have had some disadvantages to work against, which have handicapped transactions seriously. Among the chief customers of bonds are Eastern savings banks, insurance companies, and other trust organizations. Most state legislatures have definitely laid down a limit regarding such investments, and the institutions cannot go outside of those lines. These laws nearly all say that an investment cannot be made in a bond which is a second lien upon the property which secures it. A building bond secured on a structure standing on leased ground is a second lien, the lease being the first lien. This has shut off a large market for the securities. As it is the bonds have been placed in small amounts with local investors, and are now well scattered.

“The first of these companies was organized almost twenty years ago; so they have been in operation long enough to give some idea of the character of the securities. So far as the bonds are concerned, they are, with few if any exceptions, eminently satisfactory securities. They have tangible assets behind them, worth considerably more than the bond issue, and the earnings of the properties are far in excess of interest requirements. The stock, too, is proving a decidedly satisfactory investment.

"The most notable building so far constructed on this plan is the Auditorium. In that affair there was more patriotism than business shrewdness, and the stock has not yet become a profitable security. The bonds, however, are in good favor, and command a premium in the market. In the case of this building, as with several others, the fact that there is a revaluation clause in the lease operates decidedly to the disadvantage of the securities. The Grand Pacific hotel some time ago furnished an extreme illustration of the disadvantages of revaluation clauses, a revaluation entirely wiping out the equity in the building. The Chicago opera house has also suffered from the same clause.

"One of the most notably successful enterprises of this kind is the Rookery building, owned by the Central Safe Deposit Company. Dividends are now paid on the stock amounting to some fourteen or fifteen per cent. It is hardly fair to say that the investment returns that rate, however, because for three or four years all net earnings were devoted to extinguishing a floating debt, which was incurred in the construction of the building, in excess of the company's capitalization. Central Music hall is another decided success. Stockholders received twenty per cent dividends, and the stock is quoted at \$375. As a rule these companies are paying from eight to ten per cent, some of them on a capitalization that contains considerable water. In all cases the bonds seem to have been issued in moderate amounts.

"There are now a number of new enterprises of this kind under way. Some are just being started, and others are nearly completed. The Masonic Temple Association, with its issue of \$1,500,000 bonds, takes a prominent place among the new enterprises. In this case the company owns absolutely the ground upon which the building is to stand, so that its bonds become a suitable investment for trust funds. Estimates of the earning capacity of the eighteen-story building which is being erected show total receipts of \$640,000. The interest on the bonds will be \$75,000, and running expenses, taxes, etc., \$100,000; so it is expected that there will be an annual surplus applicable to dividends and to retiring bonds of some \$465,000. The Central Market Company is another one of the newcomers. It is a market-house with stalls to rent to butchers, green-grocers, and the like, and in connection with that a cold storage plant, for the use of the renters of the stalls and for South Water street merchants. Estimated earnings show immense profits, and the securities are already held far above par. On something of the same plan, and on a vastly larger scale, is the Chicago Cold Storage Exchange, which is erecting an immense building on Lake street, just west of the river.

"These building securities, both the bonds and the stocks, seem to be one of the safest, as well as frequently one of the most profitable, of all local securities. The security offered by the bonds seems almost beyond question. It has many advantages over an ordinary mortgage. It is easily transferable, without tedious legal proceedings; it is a good collateral to borrow on. There are of course more chances with the stock, but the chances so far have been more frequently in the direction of paying more than the ordinary rate of interest than less."

"The opposition to high buildings and the threat to invoke the power of municipal and

state legislatures against them, has, to a certain degree, cooled the enthusiasm of syndicates. The Chicago journals point out how unnecessary such legislation is, and one of them, citing the Abstract Company's building, states that, "the company considered over twenty different sites before it could obtain available ground, anywhere near the center of business, upon which to build. As things went it did not secure a corner and was forced to pay \$8,000 a front foot for its ground. Of course this price represents something of a bonus which the company was compelled to give because circumstances compelled it to build near the courthouse. Diversity of ownership is one of the great obstacles in the way of securing land. Some down-town property fit for high buildings has three or four owners to fifty feet of frontage. Often these owners are jealous, and if two are willing to sell the third thinks that they are plotting against him, and refuses to unite with them. The most recent argument against high buildings is that they raise the price of real estate near them to such a figure that all owners must, in self-defense, proceed to erect high buildings in order to meet taxes upon the increased valuation. It is further urged that men of comparatively small means are unable to do this, and are thus forced, against their will, to sell their property. In the first place, notwithstanding the fact that Chicago will continue to grow rapidly, there is a limit to the number of high buildings which its business will profitably support. At the present rate of building the statement is not overconservative that the time is not far off when that limit will be reached, for high buildings to-day are increasing more rapidly than the demand for them is increasing. When this demand is exceeded, profits will be lowered and property near high buildings will not be worth what was at one time paid for the ground upon which the buildings in question stand. That ground was, at the time of the erection of the building, of especial value for the purpose for which it was utilized. With the supply of the demand for high buildings that especial value will no longer exist. Assessors will be fair enough to see this, and there will be proper discrimination in the amount of tax. The only valid ground upon which the wisdom of the erection of high structures can be questioned from the standpoint of the city is upon the ground of the public health and convenience. The complaint about the congestion of streets will be disposed of by additional transportation facilities. If the advocates of tall buildings can demonstrate beyond reasonable question that they can be made safe in construction, and that they do not materially affect public health by shutting out light and air or otherwise, there is no sound argument which can be raised by any one against their construction up to the limit at which the demand for them is met."

The amount of money ready for safe investment is, of course, one of the primary causes for the existence of the high buildings. Without the elevator the moneyed interests would not dream of even a ten-story building, and without the light and safe system, known as "Chicago construction," the architect and engineer would scarcely dare to plan a high structure of brick or stone walls to be reared on the highly compressible clay of Chicago. Therefore, to bring forth the New Chicago, money, enterprise, the genius of the material inventor, and the science of building high and strong, were all requisitioned. Each was necessary, and necessity raised up one to aid the other.

CHAPTER VII.

MODERN FLATS AND RESIDENCES.

AS outlined in the last two chapters, the changes of a decade were not confined to commercial houses. They extended to dwellings and communal houses. The reverses of 1873 banished the idea of a permanent home from many hearts, and the speculators, knowing the tendency of the public mind, prepared to provide for it. The flat was to take the place of the small house by grouping ten, twenty, thirty or forty small houses under one roof, gathering so many families together, and working out in a measure a social problem of no small importance. What if the flat would destroy home life? Who would take the trouble of a home and servants and taxes and neighbors' hens and children and cows in the presence of the flat? No one. The same elevators, the same servants, the same steam, and the same light are as much at the call of the tenants of No. 40 flat as they are of those of No. 1, and the total expense is a known quantity. Who cared for the status and independence of home compared with the sweets and deceptions of the French flat. *Dolce cose a vedere, e dolci inganni* expresses the experiences of the thinking habitant; but he has been inoculated with its sweet deceptions and he is found there to-day as he could be found in 1881. The French flat or apartment house has been perfected here according to all present lights, and it has come not only to stay, but to increase in number, size and elegance.

The flat is the product, in fact, of the elevator. The elevator reached its highest development in Chicago, because the Chicagoan would not climb stairs were he inclined to lose time in that disagreeable and hurtful exercise. Therefore, without the elevator, the enterprise of apartment-house builders would be set at naught, for they could not pay the tenants, for whom they seek, to walk above the second story by means of the stairway. Conceding that the existence of the great apartment house is primarily due to the elevator, that vehicle of interior travel is not the only thing which makes it habitable. The arrangement of the interior, giving light and air; the equipment of the interior, giving hot and cold water, gas or electric lights, steam, hot water or furnace heat, call-bells and telephone communication; the decoration of the interior in mosaics, marble, frescoes and great mantels, and the pretentious, architectural exterior, with its bays, balconies and balconettes—all are present to contribute to the happiness of human life, to render the pilgrimage of life in Chicago not alone durable but also pleasant. They present inducements to the renter, which cannot be and are not

overlooked, and form the only means of providing business men who have no houses of their own with homes near the business center, where persons of their own class may congregate, as in a select residence neighborhood.

The modern apartment house is almost a contemporary of the great office buildings. While the Montauk and its imitators were lifting themselves above the old commercial houses, the Mentone was rising above the quaint hall of the Chicago Historical Society and its neighboring regulation residence of older days. Then followed others: The Calumet, Beau-rivage, Belvidere, Benton, Cambridge, Charlevoix, Dakota, Hotel de Lincoln, Hotel Rutland, Hotel Vendome, Geneva, Houghton, Ingleside, Ivanhoe, Ivar, Kenilworth, La Fayette, La Salle, Locust, Marquette, Morton, Ontario, Palermo, Prairie, St. Benedict, Seville, Victoria, Oakland and Coronado and Ramona, all sprung up as if by magic, and a thousand less notable stone-faced, pressed-brick structures, for store and residence purposes, appeared throughout the city, taking the place of ancient frame or brick houses or of ruins.

Many forms are observed, but the Romanesque and Renaissance prevail, the Byzantine sometimes creeping in in the lantern or dome, and sometimes the Moresque in the entrances or pinnacles. The older apartment houses, such as the Mentone, on Dearborn avenue, and the Cambridge, on Thirty-ninth street, have been enlarged horizontally or laterally, and decorated with the copper bay.

The Moresque blocks on Oak street and on Ogden avenue were designed in 1883 by Silsbee & Kent for B. F. Norris. Pressed brick, with brown-stone facings, bring out the alhambresque design.

The Geneva, erected in 1884, at 49 and 51 Rush street, for L. P. Hansen, after plans by John Addison, is 50x84 feet in area and three stories and basement in height. The exterior walls show rock-faced buff Bedford stone, with blue Bedford courses.

The apartment houses, known as the Hotel Charlevoix, on the corner of Rush and Ohio streets, were completed in July, 1883, at a cost of \$150,000.

In 1886 plans for the Lafayette apartment house were made by W. W. Clay, for U. P. Smith, of the Lafayette Square Company. The plans called for a seven-story house, two hundred and thirteen feet frontage on Dearborn street, two hundred and thirteen feet on Clark street and three hundred and eighteen feet on Oak street and Lafayette place, divided into four distinct parts, with four main entrances, and a court 66x170 feet in the center. The fronts show brown stone in the first and pressed brick in the six upper stories, between ornamental copper bays. The Clark street facade shows ten store fronts on the first floor, the upper floors being fitted for offices. In the other parts of the house are eighteen flats of eight rooms, twenty-six flats of seven rooms, twenty flats of six rooms; thirty flats of five rooms, forty bachelor apartments and forty-eight flats of three rooms. The total cost was estimated at \$800,000.

In the fall of 1888 plans for the apartment house on Michigan boulevard and Eighteenth street were prepared by Wilson, Marble & Lamson for the Morton heirs. A six-story Romanesque structure, 60x70 in area and one hundred feet to finial of cupola was contem-

plated. Polished marble entrances, the twelve granite columns supporting the cupola and excellent work in St. Louis brick and Bedford stone give tone to the facade. The marble wainscoting and general finish and equipment of the interior render it a modern flat in every respect.

The Parker flats, on Thirty-first street, near Cottage Grove avenue, were designed in October, 1888, by J. J. Kouhn. The fronts are constructed of pressed brick, with brown-stone trimmings. The woodwork is of antique oak, with bevel glass doors and tiled floors for the entrance. The building has one passenger elevator, steam heat and modern sanitary improvements. The same architect planned a nine-story-and-basement hotel, of pressed brick, with cut-stone trimmings, to contain about four hundred rooms, heated by steam and lighted with combination lights. The ninth story is a small tower, divided into rooms, which overlook State street.

The seven-story apartment building on the southeast corner of Michigan avenue and Thirtieth street, 75x120 feet, was designed in October, 1888, to cost \$200,000. The building contains forty-two flats. The exterior walls are dark red Anderson pressed brick, with terra-cotta trimming.

The Newberry & Darby apartment building, fronting west one hundred feet on Dearborn street, extending ninety-seven feet to alley between Chicago avenue and Chestnut street, was designed in 1888 by Thomas Hawks. It is a six-story, fireproof structure, with fronts of pressed brick, stone and terra cotta. This building cost \$150,000, and it shows itself to represent this large sum.

The erection of a four-story apartment house on the southwest corner of Indiana avenue and Twenty-third street was first considered in 1888, and plans for such a building were made by Cobb & Frost. Anderson pressed brick, with buff Bedford stone trimmings, formed the exterior front walls. Steam heat and electric bells were demanded; but the elevator, common in latter-day apartment houses, was forgotten, or deemed unnecessary for this flat of 1888.

The Palermo is a five-story-and-basement apartment house, completed in December, 1888, on Ashland avenue and Monroe street. It is 47x154 feet in area, and contains twenty-five flats, janitor's rooms, laundry, steam dryers, steam heat apparatus, gas engine, hydraulic passenger and freight elevators, etc. A new departure is that there is no coal used in any of the flats, the kitchen even is heated by steam, and a new gas stove, with perfect water back attached, is put up in each kitchen for cooking and heating of water for bath and cleaning purposes. The basement and first story are of Rockford-Bayfield brown stone, while the superstructure is of Anderson's pressed obsidian brick. Three octagon, one circular and two square copper bays relieve the fronts. The building is wired for electric lighting; has direct entrances from elevator to diningroom in each flat, gas logs or asbestos fire to each fireplace and speaking tubes from each flat to janitor's rooms. It was designed by William Strippleman, and cost about \$75,000.

The apartment house designed in January, 1889, by C. J. Warren, for Leander J. McCor-

mick, cost about a quarter of a million. This fireproof building is 150x109 feet, with first story of cut brown stone, and the remaining stories of pressed brick, terra cotta and brown stone. All the modern improvements are found in this building, but the peculiar characteristics are the laundryrooms on the top floor and the dining and billiardrooms in the basement. Simplicity is the prevailing feature of the design, while the immense proportions of the structure are relied upon for effect. Two courts, sixteen feet wide, open to the south, and provide the six flats on each floor with east, south and west sunlight. The flats are divided into parlor, library and diningroom, and are so arranged that they can be made into one room. The kitchen is supplied with gas range, slate sinks and slabs, and connects directly with the freight service. The woodwork is in mahogany, and the building is heated by steam and lighted by incandescent light. There are commodious entrances on Ohio and Rush streets, meeting at the two passenger elevators. In the basement are a billiardroom, bowling alley, barber shop and telephone.

An apartment house for the same owner was designed by the same architect, at the same time, to be erected on Rush and Ontario streets.

A mammoth apartment house was planned in April, 1889, to be erected on the northwest corner of Hill and Wells streets. Excepting the small coal office, which was then removed, the ground was wholly unimproved since the great fire. The building is twelve stories high with pressed-brick fronts, brown-stone dressings and eleven copper bays. The interior is finished in hardwood with marble wainscoting and tiled floors for entrances and main halls. A central inside court, 26x32 feet in size, extends from the ground floor to the roof, is finely decorated and has a fountain as its base. Two passenger and one freight elevator are in use. The building is thoroughly fireproof with iron stairways, and steam heating and electric lighting service. The ground floor contains stores and quarters for the engineer and janitor. The next ten floors are divided into ten apartments each. On the twelfth floor are located diningroom and kitchen and also quarters for the help.

Plans for the W. W. Henderson apartment building, on southwest corner of Michigan boulevard and Thirtieth street, were completed in March, 1889, by W. A. Furber. This seven-story building has seventy-five feet east frontage on the avenue and one hundred and twenty feet north frontage on Thirtieth street. The basement and first story of the two fronts and the window trimmings for all the upper stories are of brown stone; the front above the first story is faced with best quality of Anderson brown pressed brick; the cornices and balustrades are of terra cotta and the bays on the two fronts and corner of copper. The girders supporting floor joists are wrought-iron beams, supported by cast-iron columns; the seven stairways are of iron; the light shafts are inclosed within hollow tile fire brick. The first-story hall and elevator vestibules have tile floors and marble wainscoting. The interior finishing is of oak, maple and cherry; the private halls and diningrooms are wainscoted with Lincrusta Walton, finished in bronze; the walls of the parlors, sitting and diningrooms are tinted and finished with stencil borders and the ceilings frescoed. Sideboards are built in the walls of the diningrooms, and they and the wardrobes have beveled plate mirrors. The

entrance, parlor and sittingroom doors have cut-glass panels above the lock rails. All glass for the two fronts is French plate, and the balance of the glazing done with the best American double-thick glass. Iron, porcelain-finished bath tubs and sinks, slate-water trays and best quality of plumbing are in use. The basement has a finished stone floor and is used for boiler, machinery and laundryrooms. The seven stories each contain six apartments of six or seven rooms. Two passenger elevators, steam-heating and electric-lighting service are given this block.

The Ogden flats, completed in 1889, were sold in January, 1890, to H. Francisco, for \$140,000. The block is located in the angle formed by Ogden and Warren avenues, having a frontage of one hundred and fifty feet on the former and one hundred and eighty-five feet on the latter thoroughfare. It was the handsomest apartment building on the west side up to that date. The walls of the basement and first story are of rock-faced grey stone, and those of the remaining three stories and tower attic are of deep-red pressed brick, with stone dressings. The main entrances, opening on either street, are finished in tile and hard wood, and the approaches and sidewalks are of stone. The large court in the rear is paved with asphalt, and plate glass is used throughout the building. The interior is divided into thirty apartments, containing from six to eight rooms each. There is a bay window for each apartment. Steam-heating apparatus, elevators and other modern conveniences are included in the present interior improvements.

The southwest corner of Indiana avenue and thirtieth street was improved in 1889 with a five-story apartment building, covering 51x119 feet, at a cost of over \$100,000. This building, like that on the corresponding corner of Michigan avenue and Thirtieth street, is the property of W. W. Henderson.

The apartment house on Michigan avenue near Twenty-fifth street was designed in May, 1889, by W. A. Otis, for the Berkshire House Company. It is built of brick, with stone front, is six stories and basement in height, with two copper bays, overhanging and extending from the second to the fifth stories inclusive. The windows are of plate glass. The house is heated by steam, has water supply, gas ranges, refrigerators, sideboards, and is supplied with elevators run by gas engines. There are two suites or apartments on each floor.

The brown-stone block of two buildings on Ohio street was designed by Architect Warren in August, 1889. The corner building, 50x125 feet, is seven stories in height and the adjoining building six stories.

The Gross apartment house, on La Salle avenue and Eugenie street, was designed in 1889 by L. G. Hallberg. This building is 115x100 feet, four stories high, with stone front and galvanized iron bay windows. The cost was about \$60,000.

In October, 1889, Hyde Park witnessed the beginning of the era of large apartment houses. Within two blocks of Fifty-third street depot a six-story building, one hundred and fifty feet square and containing sixty-four apartments was conceived, the cost being about \$200,000. It is a little brick, stone and terra cotta village in itself, with its own electric light and steam-heating and power plants and restaurant.

The apartment building on the corner of Eighteenth street and Indiana avenue was designed in April, 1890, by C. S. Frost. The style is an adaptation of the Florentine-Renaissance. The building is 178x121 feet, seven stories high, with basement and first story of stone and upper walls of pressed brick and terra cotta. The copper bays and heavy cornices form a special feature of this building.

In December, 1890, the name Campbell flats, as formerly applied to the new building on Cottage Grove avenue, was changed to the Marathon. At that time the purchase of the building from Lyman & Lowell, of Boston, for \$100,000, by M. A. Loring and others, was effected. It contains thirty-nine flats and thirteen storerooms. Rock-faced brick and polished granite pillars are used with effect in the first story. A series of bays extend from the second floor level to the top.

The Kenilworth flats, on Ellis avenue and Thirty-sixth street, were designed by the owner, C. P. Thomas. The building is 158x23 feet, and is divided up into four flats on a floor, giving each flat about forty feet of south frontage, with two and three bay windows to each. This arrangement gives an abundance of light and air to every room, and has no interior courts or light shafts or dark rooms. The building is a new departure of interest to architects as well as tenants. It points out, in itself, the defects of lighting and ventilating existing in many of the modern flat buildings erected prior to August, 1889, when the Kenilworth was completed.

The apartment building on Rush street near Ohio street was designed in March, 1890, by C. J. Warren, to cost \$75,000. This is a seven-story house, 50x90 feet, with front of pressed brick and brick columns for bay windows. The interior arrangement and decoration are modern.

The Henry I. Cobb store and apartment building, on North Clark street, was designed by himself in March, 1890. It is 124x70 feet, four stories high, constructed of brick, stone and iron. This building presents material features well worth studying.

The Monaghan apartment building on the southwest corner of Harrison and Halsted streets, was begun in 1890, on plans by Architects Lamson and Newman. It is 100x175 feet, four stories high, with two towers. Bedford stone, iron and Anderson enameled brick are extensively used in this structure.

The southeast corner of Michigan avenue and Thirty-fifth street, 127½x254½ feet, was purchased in October, 1890, and in 1891 work on a ten-story apartment building was begun.

The seven-story apartment building on Michigan avenue and Twelfth street was designed in the fall of 1890 by Bauman & Cady. This pressed brick, stone and terra cotta structure shows a frontage of fifty feet on Michigan avenue.

The apartment building designed for Engels & Co., in March, 1890, by Henry Meissner and built on Calumet avenue and Twenty-sixth street, cost about \$150,000. The frontage is one hundred and thirty-one feet and the depth seventy feet. The exterior is constructed of blue Bedford stone for the first story and Anderson pressed brick for the remaining five stories. There are tiers of galvanized-iron bays, developing at the roof into low turrets all

around the building, and these, with other ornamental work, make the front elevations unusually attractive. It has iron store fronts and plate-glass windows. The building is well lighted, having an open court in the center, besides three large and four small skylights. There are several attractive porticoes, and a large porch in the rear. It is finished inside in hardwood, has marble wainscoting, tile floors in vestibules, staircases of ornamental iron work, with marble steps, ornamental ceilings, porcelain water closets, artistic mantels and sanitary plumbing; all tenants are supplied with hot and cold water. The whole building is heated by steam, lighted by gas and electricity, contains three passenger elevators, and is in every respect made a first-class apartment house.

The property fronting Michigan avenue, just north of Twelfth street, was sold for E. O. Russell, by Owen F. Aldis, to the Brooks estate and others for \$50,000 in May, 1890. Mr. Russell immediately leased it back for one hundred and ninety-eight years at a rental of \$2,500 a year without revaluation. The size of the lot is 50x171 feet, and on it the lessee erected a fireproof bachelors' apartment building, seven stories high, the full width of the lot and eighty-three feet deep. The front is of brown brick and terra cotta and the interior finished in hardwoods, with steam heat, hot and cold water, electric light, elevator and all other modern conveniences. The engines and apparatus for heating and lighting are in a separate building at the rear of the lot. In the basement of this building is a bar and on the ground floor a restaurant. The second and third floors together contain only two flats, that is the entire space on each of these two floors is used for a single flat. On the fourth floor in front is a large center room, off which two rooms on either side open. A diningroom, kitchen and servants' quarters occupy the rear space of this floor. The remaining three floors are divided into suites of two rooms and bathroom or one bedroom and bathroom. The bathrooms are especially fine in this building; they are large sized with mosaic floors, brass and nickel-plated pipes and other expensive furnishings. The special feature of this building is the comfortable and attractive bachelors' quarters.

In May, 1890, Architect H. B. Seely designed the apartment house at Forty-seventh street and Kenwood avenue. This house is 100x150 feet, six and seven stories in height, constructed of stone, burned clay and iron, and is the result of the judicious expenditure of \$30,000. The exterior is ornamental, having four front elevations of original designs. The interior is correspondingly handsome. The floors are laid in marble or tile. Two passenger and four freight elevators are in use. The projectors made this hotel entirely different from the usual apartment building, using nothing but hard coal for fuel, to avoid the smoke nuisance.

The apartment building on Grand boulevard and Forty-first, as designed by the same architect, is a six-story, brown-brick, terra-cotta and iron building, constructed at a cost of about \$150,000.

The Groveland is the name of an elegant apartment building, erected at the corner of Cottage Grove avenue and College place. The dimensions are 150x115 feet, and eight stories high. It has front elevations of serpentine Pennsylvania green stone, rock faced, with bays

of brick, and elegant entrances and balconies. The style is rather odd, but very handsome, and the building presents an attractive appearance. It is finished inside in hardwood, has tile and marble work, art glass, best sanitary plumbing, and every modern convenience. The building is heated by steam and lighted by electricity. It is provided with four passenger elevators, arranged to serve each suite of apartments privately. There is a cafe on the ground floor, from which each suite can be served with food by means of dumb waiters. It has a promenade and garden on the roof, overlooking Groveland park and the lake, and is divided by fire walls and made fireproof. The plans were made by F. B. Abbott, for John Wain, in June, 1890.

The Auburn Park hotel, on Seventy-ninth street, Winneconna and Goldsmith avenues, was designed in June, 1890, for the owners—Case & Kellogg. The exterior of this three-story, attic-and-basement structure is of brick and stone, with stone carvings, copper bay windows and plate and ornamental glass windows. Its imposing fronts, with the attractive and harmonious architectural details, make it an exceedingly handsome building. There are three front elevations, thus giving the building plenty of light from the outside, and the interior is provided with light by a skylight, twenty-five feet square. The ground floor contains three stores, hotel office and ladies' waitingroom; on the second floor are the main diningroom and guest rooms, and the third floor is occupied by guests' rooms and the kitchen; the attic is used for servants' rooms, and the basement for laundries, dryrooms, etc. It is handsomely finished inside in hardwood, heated by steam, lighted by electricity, has sanitary plumbing, freight elevator, wood mantels, and contains all modern conveniences.

In March, 1889, Architect Duncan made plans for a summer hotel building and cottages at the beach, near Eighty-fourth street, to cost \$200,000.

The Geofrey brothers' hotel building, on Sixty-third street, near the Illinois Central railroad depot, was designed in June, 1890, by W. L. Carroll, to cost \$70,000. The ground, 50x80 feet, is covered with a five-story-and-basement, stone-front building, the interior of which is well finished and equipped for hotel purposes.

The Waite office building, on the northwest corner of Fifty-third street and Lake avenue, was designed by the Doerrs, in July, 1890, to cost about \$75,000. It is built of brick and stone, adorned with bay windows, and has large entrances. On the top floor is a large dining-room. The building is occupied by offices, but has been arranged so that the lower part of it can be used for hotel purposes. The interior is finished in hardwood, and is provided with elevator service, heated by steam, thoroughly ventilated, has best sanitary plumbing and the latest improvements. The fire of March 13, 1891, destroyed the Flood block, 108 to 114 Fifty-third street, near the Illinois Central railroad tracks. It was erected in 1874 at a cost of \$50,000. That two-story-and-basement brick structure, 80x76 feet, was the pioneer of large structures in Hyde park. It contained two public halls on the upper story, and in the early days of Hyde Park Center was the headquarters for political conventions, dancing parties, fairs and social gatherings.

E. E. Prussing erected an apartment building on the southwest corner of Pine street and

Chicago avenue, according to plans by Architect H. I. Cobb, in 1890. It has a frontage of sixty feet on Chicago avenue and ninety feet on Pine street, is constructed of pressed brick and stone, and finished inside in hardwood. There are marble floors in halls and vestibule, marble wainscoting, and the building is heated by steam. A large skylight provides light for the interior. It is supplied with freight and passenger elevators and all the latest improvements. The site was occupied by two old houses which were torn down in July, 1890.

The Pullman hotel, near Fifty-third street and the lake shore, was designed in October, 1890, by S. S. Beman, for George M. Pullman, to cost \$1,000,000.

The Ozark, on the southeast corner of Wabash avenue and Thirty-fifth street, was completed early in 1891, after plans by J. J. Kouhn. It is said to be the peer of the finest apartment house in the world. A tyranny of bays with Byzantine domes or cupolas, a Moresque entrance and elaborate work in terra-cotta bands and panels distinguish the Ozark from other modern flats.

The Goodall, situated at the southwest corner of Cottage Grove and Bowen avenues, a creation of 1890, is a magnificent seven-story fireproof edifice, which, for beauty of construction and appointments, will vie with any similar structure in the city. Pressed brick of the finest quality, with Bedford stone and terra-cotta trimmings, compose the shell, the interior finishing of red oak being the tasteful result of the most careful workmanship. The two main entrances are treated in Georgia marble in two colors and imported tile in an effective manner, the *tout ensemble* being an admixture of refinement and grandeur. A very material factor in the comfort of the tenants of the Goodall will be found in the deadened walls and floors, which have been rendered so perfectly impervious to sound that the loudest noises in one flat cannot possibly penetrate to that above it. The building has a capacity of forty-three flats in convenient suites of from three to ten rooms. Steam heat, gas and electric light pervade the entire building, while among the most modern conveniences may be mentioned excellent passenger and freight service, hot and cold water throughout, as well as ample bath and storage rooms. The kitchens and other offices are thoroughly equipped with the latest appliances. The large and lofty dwellingrooms, perfectly light and airy as they are, absolutely lack nothing in the way of appointments and conveniences. This building can have no better recommendation than that which lies in the fact of the work upon it having been carried on under the immediate supervision of the owner, George B. Goodall, who has been so closely identified with the building interests of Chicago. An important and novel feature of this new apartment building is the Oakland safety deposit vaults, put in at a cost of \$60,000, which occupy the basement. The Papilo Novi was used in mural decoration in this building. It is a composition of cement, coarse burlap and mineral wool, cast in molds, manufactured in sheets and fastened to the brick walls. What, with glazed tile wainscoting, French tile floors, metallic ceilings, and all the modern conveniences which belong to this great apartment house, the Goodall is a veritable paradise. Near the cable cars and the Illinois Central railroad it is within easy distance of the central business district, and yet almost overlooks the system of southern parks and boulevards, a *rus in urbe* village of forty-three houses within four walls.

The Grand Sheridan hotel at South Evanston, on the Sheridan road, was designed in the fall of 1890 by R. G. Pentecost. From the original description the following is taken: "The hotel itself will cover a site 180x250 feet, the large area additional to this to be laid out in ornamental grounds. The building will be five stories in height, constructed of pressed brick and trimmed with stone; it will contain 160 rooms exclusive of servants' apartments and a dancing hall which is to be on the top floor. The building is intended to be fireproof throughout. With this purpose in view, steel beams and tile partitions and floors will be predominant features. The roof will be of slate, terra cotta trimmed. Two passenger and one freight elevator will be in use, and the furnishings will be both stylish and massive. The main floor will be of marble. One of the strong and pleasing features of the Grand Sheridan hotel will be a wide porch, estimated at twenty feet, which will surround the entire structure. Its sloping roof will be of slate, trimmed with terra cotta and galvanized iron, the whole to be supported on steel posts. Three large entrances are designed which will admit of rapid exit in case of fire."

In November, 1890, Cady & Bauman designed an apartment house for Richard Peck, to occupy the northeast corner of Dearborn avenue and Goethe street. The plans called for a four-story building, 50x130 feet, with Roman pressed-brick and brown-stone facades, modern interior decoration and equipment.

In November, 1890, plans were prepared by Clinton J. Warren for the N. K. Fairbanks hotel building on Michigan avenue and Twenty-first street. Such plans called for a structure ten stories and basement high, fronting seventy-three feet on Michigan avenue and one hundred and seventy-one feet on Twenty-first street. The first two stories are constructed of blue Bedford stone and the remaining eight stories of buff Roman brick, with buff terra cotta trimmings. Plate glass is used throughout, and the interior is finished entirely in hardwood, with tile and marble work in the entrance, office and halls. The first floor is occupied by the office, lobbies, readingrooms, billiardhall and restaurant, the second floor by the diningrooms. The floors above are so constructed that two or three rooms may be thrown together or may be used separately. There is a bathroom for every two rooms in the house. It is heated by steam, has elevators, electric light and all improvements.

Plans by W. T. Leshner for W. B. Charles' apartment house on Michigan avenue south of Thirtieth street were accepted in December, 1890. The first story and basement are of granite, and above of pressed brick, with terra cotta. The interior is finished in hardwood, with mosaic and tile floors and wainscoting. There are two passenger elevators, steam heat, electric light, and the best of sanitary and modern conveniences.

The old Leiter building, situated on the corner of Twentieth and State streets, was removed and a modern store-and-flat building, erected according to plans by Architect George O. Garnsey, in the spring of 1891. It covers an area of 155x151 feet, and is four stories high. The exterior is constructed of brick and stone, with iron store front, and the facade adorned with bay windows of copper and other attractive features. It is covered with a composition roof. The interior is finished in hardwood, marble wainscoting, tile floors, and supplied with all the

latest improvements. The upper floors are reached by means of elevators and roomy stairways. It is provided with improved sanitary appliances, steam heat and electric light, and special attention is given to the proper ventilation of the building. The cost was \$100,000. In June, 1891, the Chicago City Railway Company completed a new office building, between the Cooper flats, just noticed, and their power house.

The Stebbins & Cozzins apartment building, on Indiana avenue and Twenty-fourth street, was designed by H. W. Wheelock, in November, 1890. It is a six-story-and-basement building, 127x121 feet, with the first story of rock-faced brown stone, and the upper stories of pressed brick. All that the judicious expenditure of \$200,000 could furnish toward giving a perfect apartment house, was accomplished.

The material in the Ashland block was purchased in May, 1891, by E. J. Hopson, who will utilize it in the erection of a hotel, at the southeast corner of Twelfth street and Michigan avenue. Mr. Hopson has owned the property adjoining this corner for a number of years. The widening of Twelfth street will bring out his holding to a corner suitable for a hotel site. The stone, cornices, and some of the frames of the Ashland block, can be used in the new building.

In May, 1891, Robert Rae, Jr., completed drawings for an apartment building to be erected on Wentworth avenue, Eggleston, for J. Ingraham, to be 50x115 feet, three-story and basement. The basement is of rock-faced Bedford stone, the superstructure of St. Louis pressed brick, with cut-stone and terra-cotta trimmings, copper bays and cornice. The interior is finished in hardwood, much of the work being according to special designs. The vestibule has mosaic floor, electric bells, speaking tubes and dumb waiters. The six-story apartment house on Wabash avenue near Fourteenth street was designed in May, 1891, by Robert Rae, to cost \$60,000. A rock-faced first story with brick and stone superstructure, ornamented by copper bays, marks the style.

Plans for a block of eighteen three-story stores and flats to be erected on Thirty-first street were made by J. J. Kouhn in May, 1891. They have pressed brick and stone fronts, and are fitted up with all the improvements. There are eighteen stores and fifty-four suites of apartments. The same architect designed a three-story-and-basement apartment house with three fronts, respectively one hundred and twenty-seven, one hundred and twenty, and one hundred and thirty-six feet in size, to be erected at Auburn Park at a cost of \$200,000. It will be in the Queen Anne style of architecture, of pressed brick and stone, with marble and onyx wainscoting, copper and terra-cotta bays, red slate roof, and the best of improvements. He also planned a four-story stone and flat building of pressed brick and stone construction, to be erected at Auburn Park.

A new flat building on Cottage Grove avenue, north of Thirty-ninth street, was designed in 1891 by Jaffray & Ohrenstein. It is a five-story pressed-brick building, one hundred and seventy-five feet front and eighty-four feet in depth. The first story is divided into nine stores, and the upper stories into sixty-four apartments. Copper bays are numerous in the facade.

The H. B. Smith four-story apartment house on the southeast corner of Vincennes avenue and Fortieth street is 51x116 feet in area, is constructed of pressed brick and trimmed with brown stone and terra cotta. It was designed by Thomas & Rapp for sixteen apartments of seven rooms each.

W. G. Barfield completed plans in May, 1891, for a nine-story, basement-and-attic apartment building to be erected by Dr. F. D. Clark on Michigan avenue, opposite Park row. They provide for a strictly fireproof structure, to cost \$135,000. The fronts of the lower two stories are of gray granite, while the upper stories have front of Kasota stone. Two bay windows extend up through the front bearing cone-like roofs. The entrance is in granite, with walls and floor of marble and mosaic. Though the first story is Romanesque, the vertical character of the superstructure, undisguised by the great bays, undoes the style, leaving it anything or everything.

The Price ten-story apartment house on Dearborn avenue and Division street was designed by Thomas Hawkes in May, 1891. It has two fronts. Balconies connect the bays, forming a fire escape. On the corner is a circular bay window, surmounted by a tower one hundred and sixty-two feet high. There are three entrances, finished in marble, and elevators at each. On the northeast corner of the lot there is a steel-and-glass building for the freight elevator, engines and dynamo, connected by iron bridges at the different floors. There is a common readingroom, a ladies' parlor, a smokingroom, a ballroom, and on the top floor a kitchen. Dumb waiters connect the kitchen with each apartment. On the roof is a garden and pavilion. The interior is finished in hardwood, mosaic floors, marble wainscoting, steam heat and electric light.

A large hotel building was designed in May, 1891. The projectors are Fairburn & Son, and the site selected is the lot at Nos. 34 and 36 Washington street, which is now improved with an eight-story brick building, erected a short time after the fire. The new hotel will have a frontage of fifty feet on Washington street and a depth of one hundred and seventy feet to the alley. It will be fourteen stories high. The front will be of terra cotta and stone, with a double row of bays extending from the second story to the thirteenth. The interior will be of iron and tile construction, making the building practically fireproof. The finishing will be of marble and hardwoods. The estimated total cost specified in the building permit is \$300,000.

Plans for the five-story apartment house on the site of the old synagogue, between Fourteenth and Fifteenth streets, on Michigan boulevard, were made in *July*, 1891, by Edward White & Co. The building is 75x171 feet, arranged in twenty-four suites, and erected at a cost of \$100,000.

The Lexington hotel, on the northeast corner of Michigan boulevard and Twenty-second street, was begun in May, 1891, when several frame houses, which had occupied the site for years were removed. This new ten-story hotel shows a frontage of one hundred and twenty-five feet on the boulevard, and one hundred and sixty-one feet on Twenty-second street. The plans by C. J. Warren provide for a building of steel construction, faced with brown brick

and terra cotta. The main entrance on the boulevard leads to a rotunda 50x68 feet. Over the main entrance is built a balcony, forty feet wide, overlooking the boulevard. This balcony is eighteen feet deep and projects seven feet from the main walls. The hotel proper contains three hundred and seventy rooms, arranged in suites. Eleven tiers of bay windows extend up through the building from the second story. On the Twenty-second street frontage are nine stores. The corner is devoted to a tower which receives a corona above the cornice of the main building. In July, 1891, the contract for construction was awarded to Wells Bros., the total cost being estimated at \$650,000.

The Fitch apartment house, on Wabash avenue and Thirty-seventh street, was designed in July, 1891, by F. J. Norton. It is 50x85 feet, six stories in height, with fronts of pressed brick and terra cotta. Two metal bays, springing from corbels above the rock-faced Romanesque first story, receive Byzantine domes above the parapet.

The Kramer flats, on the northeast corner of Madison street and Hoyne avenue, was designed in 1891 by Wilson & Marble. The house is 136x70 feet. The first story is devoted to stores, and the three stories above to eighteen flats or apartments.

The Hawkins apartment house on Michigan boulevard and Forty-second street was designed by T. W. Wing, in May, 1891. It is a five-story pressed-brick structure, showing some attention to architectural detail.

The Spencer apartment house on Oakenwald avenue and Forty-third street was designed in June, 1891, by J. E. O. Pridmore. It has street fronts of buff Bedford stone and Tiffany pressed brick. The two main entrances are enriched with carving and Italian marble wainscoting floors and steps. The apartments are heated by steam and lighted by gas and electricity. They have gas ranges and logs. Special features of the building are a continuous supply of hot water to every apartment, and live-steam supply in all wash-trays to boil clothes.

The Pelham apartment house, on the northwest corner of Garfield avenue and North Clark street, completed prior to 1891, was sold in May of this year for \$110,000, to Angus, Gindele & Seely. The property has a frontage of ninety-nine and one-half feet on North Clark street, and a depth of one hundred and thirty feet on Garfield avenue, running back to an alley. It is a handsome building, being constructed something on the plan of the Pullman building, is four stories high, and contains twenty-eight apartments and five stores. The gross rental is \$13,640.

Plans were made in April, 1891, by C. S. Frost, for a block of four-story-and-basement stores and apartment houses combined, at Clark street and Belmont avenue. The material is Anderson pressed brick, brown stone and terra cotta. The design is in the Flemish style, with a high broken gable in the center. The frontage on Belmont avenue is one hundred and fifty-eight feet, and on Clark street ninety-two feet. It contains three stores and twenty-eight suites of apartments. The interior is finished in hardwoods, has steam heat and hot water, besides an independent water supply.

The Hammond & Archer apartment house, on Dearborn avenue and Division street, was

designed in July, 1891, by Francis J. Norton. It is six stories high and has a frontage of thirty-three feet on Dearborn avenue and one hundred and twenty-five feet on Division street. The fronts of the building are of brick, stone, and terra cotta, with metal bays and two projecting corner towers. The interior finish of the building is in oak, with halls floored in tile and wainscoted in marble. The building complete represents an outlay of \$100,000. Many architectural forms are shown, but they are so intermingled with the tyrannous bay and corner tower, there is some difficulty in locating them.

The trustees of St. Luke's hospital began the construction of the six-story store-and-apartment house, on the grounds owned by the hospital at Nos. 1423 and 1429 Michigan avenue, at a cost of \$140,000. The building was designed by S. S. Beman. It has a frontage of one hundred and twenty and a depth of one hundred feet, built in the Renaissance style of architecture, the first story being constructed of dressed blue stone. Pressed brick, relieved at intervals by a five-inch band of terra cotta, completes the upper stories. The building contains four stores in the first story, and twenty apartments of eight rooms each. It is heated by steam and lighted by electricity.

With all that is accomplished toward the multiplication of the French flat, a beginning has only been made. Were all the new apartment houses, now on paper, converted into stone, brick and iron, many miles of frontage would be under roof before the close of the year 1891. Many of the projected buildings will be erected certainly, and greater numbers, yet unmentioned, will be raised to fill up broad gaps on the prairie, within the city, before 1893. Two tower buildings or hotels with towers have already been designed for the neighborhood of Jackson park. Plans suggested by E. W. Allen and worked out by Perley Hale have been accepted by the Park View Hotel & Tower Company. The observation tower is to reach a height of five hundred and thirty-three feet, divided into four sections. At each section there will be balconies, some of which are to be inclosed in glass, the remainder to be separated from the surrounding space only by iron railings. There will be a full service of elevators for sightseers, two sets running only to the first balconies, where there will be a restaurant and comfortable seats, according to the present plans. A charge will be made for going to the first balconies, and an additional fee for going to the balconies above. All the details of the structure have not been decided upon; but the present plan is to surmount the tower with a huge globe of structural steel, inclosed in glass, and with the countries of the world marked out on the surface. This is to be lighted by electricity, and the great height would cause it to show up prominently for many miles around, especially from the lake, taking the place of government lighthouses in guiding ships in a storm. The hotel to be built in connection with the tower will be modern in every respect. It is to be seven stories and built of steel, as the tower will be, but is to have a pressed brick and stone exterior of slightly appearance. The company has an option on a lot, 160x175 feet, on Stony Island avenue, near Sixty-third street, and the building is to cover the entire lot. It will be fitted with all modern conveniences, and will be opened in time for the accommodation of the World's Fair visitors.

The Bird's Eye View Tower Company have the designs of Architect Deam for a house of

the same character. Upon the roof of the hotel will be a garden and restaurant. The hotel itself will be 100x122 feet and six stories high. It will be of steel, terra cotta and hollow tile construction and fireproof throughout. The ground floor will contain six stores, each 18x40 feet. The entrances to the hotel and tower will be upon the same frontage on Stony Island avenue, but will be separate. The diningroom of the hotel will seat two hundred people, and the structure itself will have one hundred rooms, each one of which will open directly to the outside light and air. The height of the building will be seventy-five feet. The tower will be built upon a special and separate foundation of special steel construction and will be three hundred feet high. It will be furnished with three balconies, each with an amphitheater floor, overlooking the exposition grounds. Each balcony will be roofed with a steel-canopy top. The total standing capacity of these three balconies will be seven hundred and seventy-five. The first will be built one hundred, the second two hundred and the third three hundred feet from the ground. The four elevators, which will furnish transportation, will be inclosed and will furnish the only wind obstruction that there is in connection with the tower.

The Vickery flats, 1206 Wabash avenue, were designed in 1891, by H. B. Wheelock; the La Berge flats, 153 Madison street; the Bayor flats, 1433 and 1435 Wabash avenue; the Sullivan apartment house, on Sedgwick street; the Stevenson, Barker & Betz hotel, on Stony Island avenue and Seventy-first street; the Peter Mueller flats, 686 and 688 North avenue; the B. F. Tobin apartment house, 3301 to 3311 Cottage Grove avenue (cost \$125,000); the Columbian flats, on Wentworth avenue and Sixty-ninth street, and the Auburn flats, on Cottage Grove avenue, near Twenty-ninth street, all show the development of the French apartment house. A hundred buildings of the same character might be named, and still the list would not be complete, for as each day dawns, the news of new apartment houses designed, and reports of greater projects in the same direction, appear, demonstrating that the beginnings of flat buildings in Chicago have only been made, and that it is only possible to record what has been accomplished.

The seven-story Hotel Metropole on Michigan boulevard and Twenty-third street, designed by C. J. Warren, cost \$425,000. The ten-story Virginia on Ohio and Rush streets cost a half million of dollars; the seven-story Aldrich on Lake avenue and Forty-second street cost \$300,000, and the ten-story Kerr building on Washington avenue and Sixty-first street cost \$400,000. They are all elegant apartment houses, showing the hand of the modernizer on the exterior and interior. The Kadish, on Wabash avenue near Twenty-fourth street, was completed in 1891 at a cost of \$100,000, and the Waite building, in that vicinity, at a cost of about \$40,000. The Ricardi apartment house was designed by Mr. Wheelock.

The modern flat is the palace of those who wish to be relieved of house owning and its cares. It requires a more minute description than that given in former pages, and, to answer this requirement, the owners of one of these structures are quoted as follows: "The Hyde Park hotel, or Hotel Hyde Park, as it is sometimes called, is already a widely known house, and even where not known, the name would be sufficient to suggest its location and comparative

standing, for Hyde Park is too well and favorably known as a rural residence district to need description of any kind. Situated on the shore of Lake Michigan in Chicago, only six miles from the very center of the city, it contains the finest and most costly residences of Chicago's wealthy men. In the very midst of the best portion of this district, the Hyde Park hotel is located, commanding a view on one side of the broad expanse of lake, only three hundred feet away, and on the other a myriad of handsome houses studding the almost endless groves of trees. Fifty-first street boulevard, one hundred feet in width, connecting the two divisions of the South park system, and forming, with Midway Plaisance, a circular boulevard drive passes in front of the house, and a constant stream of carriages can be seen almost at any time from the broad balconies of the house. The building of itself would be an ornament to any neighborhood. It is eight stories high, with a basement, and the general trend of its architecture is Romanesque. The main entrance is on the boulevard, and by its artistic design invites an inspection of the interior. The material principally employed in the construction of the building is the celebrated Tiffany pressed brick, with trimmings of Portage brown sandstone, a combination which secures an ornate as well as light and pleasing effect. The building has large windows, oval shape, and at the summit, directly over the main entrance, is an observation tower, surmounted by a twelve-foot flagstaff. The house is magnificently equipped as to verandas, as any hotel designed to enjoy a heavy summer patronage should be. There is a large veranda extending entirely around the building at the second story, and over the main entrance as high as the fifth story are verandas of substantial construction and elegant design, while on the Jefferson avenue side is a vast piazza, on a level with the grand floor, entered from a hall to the right of the rotunda. Verandas also go as high as the fifth story on this side, so that if any guest fails to secure a sufficient supply of fresh air it is because he prefers to stay indoors, and not because of a lack of facilities. The building is absolutely fireproof from cellar to garret, the floors and partition walls being constructed of solid terra cotta masonry. The systems of heating and of ventilation are of the most approved modern pattern, and the lighting is done by electricity.

"The extent of the investment may be realized when it is stated that the total cost of the building and ground is in the neighborhood of \$350,000, with an additional \$50,000 for furnishing. It took two years to complete the hotel, the work being performed under the supervision of Theodore Starrett and George A. Fuller, a Chicago firm of general builders and contractors, of which everything that is complimentary may be said.

"Having described in a general way the appearance of the hotel, as viewed from the exterior, one may step inside and examine the interior at his leisure. Passing through the main entrance before mentioned, the grand rotunda, the dimensions of which are 50x100 feet, is reached. The floor is laid in fine mosaic marble; the walls and the six Corinthian columns being wainscoted to a liberal height with fine Italian marble, which secures a singularly chaste effect. The office stands to the rear, and its furnishings are very rich. There is a highly polished counter; and a dome-shaped skylight of cathedral glass in gorgeous designs sends down a soft and agreeable light, and adds materially to the general harmony of the

effect. Handsome desks and other furniture complete the office equipment. Passing to the right of the office the grand staircase of iron and marble, which is of generous width is seen. Light is thrown on the stairway by a handsome chandelier, composed of sixteen electric incandescence lamps. To the left of the office is an ice-water fountain of marble construction, and with nickel-plated trimmings, and beyond this is found the way to the washroom. The latter apartment, like the rotunda, is wainscoted in marble, the stationary wash basins being of the same material. The gentlemen's toilet, adjoining, is furnished entirely in marble, and all its furnishings are of the most approved modern style. Opposite, and to the right of the office, facing on the boulevard, is the reading and writingroom, also wainscoted in marble and equipped with the handsomest of chairs and tables, and the usual writing materials. Three hundred incandescence lights are employed in the lighting of the writingroom and rotunda, and the splendor of the effect may be imagined. The fittings are in quarter-sawed oak. To the right and the left are the commodious passenger elevators. The office and elevators communicate with the ladies' entrance, which fronts on the boulevard, to the left of the main entrance, and leads to a handsomely furnished receptionroom, and an extra room for the use of the nurses of the guests' children, for whose especial benefit it was designed. The diningroom deserves special mention. The entrance to it is at the foot of the grand staircase, to the right of the office. It is 50x100 feet in floor space, and fronts on Jefferson avenue. The ceiling is 22½ feet high. The walls are wainscoted in Italian marble, the wainscoting being surmounted by splendid beveled French mirrors. The woodwork is of quarter-sawed oak, carved in intricate designs, and the floor is of mosaic marble. A magnificent skylight of stained glass set with many jewels lends a mellow light to the room by day, and at night the electric light is again brought into play. Powerful arc lights placed above the stained glass, cast a rich glow from above, and, in addition, two hundred and six incandescence electric lights are ranged along the walls near the ceiling. A fine view of Jefferson avenue may be had from the diningroom, through six large windows of plate glass. The trimmings are on the customary scale of richness. The tables and chairs are of oak of unique design, and the silverware and other table appointments leave nothing to be desired in point of elegance. The room is cool in summer, and its perfect system of steam-heating will make it hard to beat for comfort in winter. It must be remembered in this connection that, when occasion demands it, the diningroom can be transformed into as desirable a ballroom as the most inveterate devotee of the pastime of dancing could wish for. From the diningroom the guest naturally turns to the parlors. The three parlors and assemblyroom are situated on the second floor, fronting on the boulevard, and are reached by the elevators or stairway. The parlors are 50x100 feet, and are tastefully finished in birch wood. Handsome mantels, costly beveled mirrors, soft Wilton carpets, luxurious oak wood settees, inviting arm-chairs, and a splendid upright piano, eased in cherry, are some of the sights which greet the visitor and convey an instant impression of combined elegance, luxury and good taste. No pleasanter place for reading or for a quiet chat with a congenial companion could be wished for. The parlors are at all times well lighted, and have an effect of general cheerfulness.

“The hotel has three hundred rooms, furnished in suites of two to five apartments. Of these, fifty suites are furnished with wood mantels, fire grates with fancy tiles, and private baths, and are handsomely lighted with incandescent lamps. All the rooms are connected with the office by electric call and return bells, and each room is supplied with a large closet, and is heated by steam when desired. The majority of the rooms command a view of Lake Michigan, and while on this branch of the subject it may not be amiss to repeat the assertion that the hotel is fireproof throughout. The hallways of the hotel are wide and airy to the highest degree. Fine brussels and Wilton carpets make them soft and easy to the tread. To make assurance doubly sure, where the safety of the guests is concerned, fire-escapes have been placed at the ends of the hallways, thus affording another means of egress if such should ever be needed. The chandeliers that diffuse their soft rays through the hallways are a combination of gas and electric lights, and are richly finished in brass. No hotel would be complete without a billiardroom, and in this respect the Hyde Park hotel can challenge comparison with any rival establishment. The billiardroom is located in the basement, directly beneath the diningroom, and is entered either from the rotunda or Jefferson avenue. It contains six tables of the best make. The tables are all finished in oak, which harmonizes with the quarter-sawed oak finishing of the room. Near the room are located the handsomely-appointed barber shop and public bathrooms—a whole institution in themselves.” This description will apply generally to the other great apartment houses of the city. In each of them is found every convenience and equipment which the light of our present civilization suggests.

The modern residence is very far removed from the city or manor house of even thirty years ago. It is opposed *in toto* to ancient ideas, and cannot be associated, in the minds of grandmothers, with domestic life as they understood it in the summer of their youth. It is a palace in miniature, smaller of course, than the homes of European or Asiatic princes; but healthier, better equipped with the conveniences of life, cleaner, more like civilization, and certainly purer than the homes of the persons just referred to. All the past appears to be forgotten in the erection of the modern dwelling. The late John W. Root, in his last contribution to Scribner's Magazine, speaks as follows of domestic architecture, having in mind the Chicago dwelling house. “The conditions attending the development of architecture in the West have been in almost every respect without precedent. Up to a time twenty years ago every energy of the hardy pioneers who were opening the vast district now called “the West” was expended in the most rudimentary work—that demanded by self-protection and self-support. During this period of ceaseless struggle, architecture, as we understand it, was not thought of, and the most primitive log hut served for shelter. But as cities began to spring up, the “balloon-framed” wood house was evolved. This early type of dwelling has made the growth of the West possible. Even to-day many western cities, not only like Chicago, whose earliest growth dates back fifty years, but like Duluth, Minneapolis, Omaha and others of later growth, are more than half made up of these frame houses. In Chicago the great west side contains thousands of them. Their life, however, is now nearly finished,

for in nearly every western city of more than one hundred thousand inhabitants the law is passed that within city limits no wood house may be built, so that the next five years will see their total disappearance in favor of more or less substantial structures of masonry. Thus these hardy pioneers of architecture, in their very disappearance, do architecture some service, for because of them every old western city must be almost entirely rebuilt, and this under modern and enlightened auspices. In Chicago, previous to the great fire of 1871, the typical city house, whether of wood or stone, or of both combined (for often a stone front was a mask covering a structure in every other respect of wood), was in general arrangement not unlike the corresponding house in New York. Chicago possessed a few interesting souvenirs of its early history, but these, alas! went with the great fire of 1871, and scarcely a remnant remains; and of these few not one has been spared.

From the early and meager architectural development of this and other western cities the present state is vastly removed. Indeed, modern western dwellings seem to have scarcely a visible trace of relationship to these earlier types. First, let it be noted that there is in western cities a notable absence, compared with cities in the East, of houses built in blocks. The reason for this is obvious. Eastern cities being older, were begun and their traditions established at a time when their citizens were more interdependent and facilities for transportation were less complete than now. For this reason they are not only more compactly built, but ground has become dearer than in the West. The reverse is true of western cities, and the result is that residences much more frequently occupy considerable space, being entirely detached from other houses and surrounded by their own trees and lawns. This suburban effect is also enhanced by the extraordinary increase in the variety of building materials, which, coupled with the characteristic western love of novelty, often leads to the erection of houses as different in material, color and treatment as is possible to conceive, different dwellings in the same street being as independent of each other—often as apparently hostile—as if separated by wide stretches of open country. Nevertheless, many streets thus built up present a superb air of space, comfort, and even luxury. In driving through the streets the eye is at no time wearied with the monotony which is so tiresome in Fifth avenue or other similar streets in eastern cities, but is everywhere delighted with the constant change, constant appeal to new sentiment, and that delightful sense of the picturesque, which to the stranger is so inspiring. Notable among such streets are Euclid avenue in Cleveland, where the splendid residences which line it are often set back as much as two hundred or three hundred feet from the street; Michigan boulevard and the lake shore drive in Chicago, superbly paved streets, with great variety of interesting outlook; Prospect and Grand avenues in Milwaukee, the first overlooking the lake from a bluff one hundred feet high, the second a magnificently wooded avenue two hundred feet wide, and several avenues in St. Paul, Minneapolis and other cities. In the growth of their plans, western city houses have tended toward greater enlargement and importance of the living and dining-rooms, at the expense of the parlor and reception rooms. One feature in the plans of these dwellings must be clearly defined. This is their openness. Not only are windows upon the

average larger than in the East, but they are more frequent, as are also bay-windows, oriel, etc. Fireplaces have steadily grown in dignity and beauty. Take the subject of western house plans altogether, it will be found that from 1874 to within a few years back there was a tendency toward all sorts of ingenious arrangements producing odd and startling effects; but since then a reaction has set in toward simpler and more practical plans, in which space, light and utility supplant mere eccentricity. The typical western dwellings are better finished within than their exterior would seem to indicate. The reverse of this is seldom true, and this is a good deal to say for the certain honesty in western cities, where the occupant of the house is less interested in making a spacious display to his neighbors, than in acquiring a solid and enduring comfort for himself. Architectural tradition in the West, there is none. Even from such practices as may exist in the East, the West will often hesitate to borrow. The dwelling houses now erected in Chicago have marked peculiarities, not to be found in other cities. That this western architecture is vital, cannot be denied. With all its crudity, begotten of ignorance, but more often begotten of haste, domestic architecture in the West is certainly vigorous. There can be no question upon its insistence of the right to live. And with this vitality there will not be wanting material with which to work."

Jean Berand in his new painting "Magdalen and the Pharisees" introduces an old idea in a new dress. There is Christ at the banquet table; Magdalen, dressed in modern widow's costume, sits recumbent at his feet, and, looking on the scene, are men dressed like members of a leading Parisian club. Strange to behold the Hero of the New Testament seated among Parisians of the nineteenth century. The artist expressed the particular quality of Christ, which is unity, goodness and peace in all climes and nations. He simply points out Christ adapting himself to the nineteenth century ideas, and conveys the architectural fact that art is concrete and abstract. It can be adapted, but there is only one original. From this original there are many departures. Some are beautiful, independent ideas, some are the opposite; but group them all and the ensemble is pleasing. A walk or drive along the southern boulevards or the leading north side residence streets will confirm this and further determine that what Berand conceived in 1891, Chicago architects had been executing for a decade. They revived old forms, dressed them anew and mixed them up so thoroughly that they appear beautiful and picturesque in a group or in lines, where alone one of them would hurt the eye and heart.

The Elizabethan, the Jacobean, the Queen Anne and the neo-American styles are poor mixtures of the poorer parts of the Greek, Italian and French schools. To draw an artless simile—they bear the same relation to architecture that oleomargarine does to the finest Elgin butter. The Elizabethan architects mixed the Italian and Gothic, the Jacobean or the architects of James I., the Norman, Italian and Gothic, and the Queen Anne architects placed every monstrosity they could imagine under roof. All these styles and more, the Chicago architect tamed down, robbed them of the rubbish and made an alloy of the little worth that was in them, with what was beautiful and adaptable in the classic forms. It is not just however to confine architectural effort in the domestic field to the decade just ending. A few very elegant mansions were erected here prior to 1880.

The Medill dwelling on Cass street, built within the half decade ending in 1875, is the finest specimen of house-building known to that period. The Marquette brown stone walls, central doorway, large plate-glass windows and general substantial air give to the home of the veteran editor an appearance of solid grandeur and warmth all its own. Another and another exception might be made, but one such building is sufficient to rescue the domestic architecture of the seventies from oblivion.

The erection of the Storey palace, on Grand boulevard, was an era in the history of the building up of the great South Side. The five and a-fraction acres in the Storey tract were bought by W. F. Storey, of the *Times*, for something like \$1,600 an acre in 1867 or about two years before the parks were located. Five adjoining acres were sold the same year for \$1,600, which was one hundred per cent in advance of what the owners offered them for the year previous. The panic of 1873 did not effect prices here materially, and when the great marble pile was erected, the advance began. In September, 1889, the palace and grounds were sold for \$225,000, the marble building, which cost about \$250,000, being appraised for \$75,000; 350x180 feet on Grand boulevard at \$70,000; 350x180 feet on Vincennes avenue at \$50,000 and two hundred and forty feet on Forty-third street at \$30,000, or \$150,000 for a fraction of a tract which cost \$1,600 twenty-two years before. The Storey palace is a three-story, attic-and-basement structure in the Italian Gothic style, with Norman and early English windows thrown in. The principal facade shows the square six-story, basement-and-attic tower in the center, the veranda on each side, the portico, the balconies, balconette and the upper bracketed gallery on the attic level. The tower assumes its square form midway in the mansard roof, ascends two stories to the cornice and then receives the lantern. This is not altogether for ornament, as a chimney is carried above the level of the lookout chamber or lantern. The side elevations present a tourette, a great bay with roof slanting from the first dormer, a round tower with cone roof and a circular conservatory. The richly capped pillars in the portico and veranda, the pilasters and engaged columns, the balustrades, the band-courses and even the chimneys speak of exhaustive design.

The residence for the priests of the Cathedral of the Holy Name was completed in 1881, at an expense of \$75,000. It conforms in style to the cathedral and is one of the very first of the great stone residence structures given to Chicago after the revival of business.

The Kent residence, on Michigan avenue and Twenty-ninth street, was designed by Burnham & Root in October, 1882. It is 60x100 in ground area, three stories high, constructed entirely of pressed brick, with molded jambs and bands in terra cotta, bringing out some of the details of the French Renaissance of Francis I., such as carving in terra-cotta panels and enriched friezes. Two great bays, flanking the entrance, are united in the second story, their outside lines being eorbeled out to the main wall so as to come under one roof. By this means the entrance is in a deep loggia in which are windows opening into the bays. The only windows in the third story appear in the elaborate tympanum, formed of terra cotta. The sides of the building are also ornamental and the interior decorations superb.

The residences of C. B. and J. V. Farwell, on the north lake shore drive; the Union

clubhouse, on Washington place and Dearborn avenue; M. D. Wells' residence on Michigan avenue and Twenty-sixth street, each one costing over \$100,000 were all projected in April, 1882.

The plans by Cobb & Frost for the Palmer residence on the lake shore drive were approved by the owner in April, 1882. The architect's description of the house credits it to the early Egyptian embattled style, with modern dressing such as large bays. The east front is eighty-two feet and the depth one hundred and eight feet. Two windowed projections surmounted by balconies rise to a height of three stories, and with the stone balcony on the southeast corner give prominence to the east facade. The north facade shows a heavy bay and a square tower, with turret on its northeast corner, the finial of which is eighty feet from ground level. Petit tourettes mark the upper corners of the roof outline on the east front and other parts. The square tower appears more imposing than it really is, owing to the architectural aims toward this end in the northeast corner. The ordinary arch of the pointed style is not visible, but the early style is liberally endowed with pillars of the Gothic period. The porte-cochere, on the northeast corner, and the conservatory, 60x40 feet, on the south side, are well brought out. The main entrance is in the northeast corner. From the porte-cochere a large vestibule is entered, and then a hall, 30x33 feet, the height of two stories, with gallery on the level of first floor. The main stairway with its marble dados and rich furnishings is found here. The library, 20x42 feet, lighted by two bays, occupies the southeast corner. The morningroom, 20x24 feet, the diningroom, 22x32 feet, with its old-fashioned fireplace, and the receptionroom in the tower, 15x18 feet, open on corridors. In the northeast corner is the drawingroom, 22x51 feet, lighted by a bay 22x7 feet. The statuary alcove at the west side of this room is lighted from the ceiling. The kitchen is in the basement, and the servants' rooms in that section of the building carrying a third story. Canada gray limestone, laid in six-inch courses, and trimmings, moldings, carvings and cornices in Ohio sandstone, shown in the exterior, were all cut and furnished by Young & Farrell.

The Franklin McVeagh residence, designed by Richardson, is a two-story, attic-and-basement house, constructed of rock-faced stone. The arcade of three arches on the first story, the arcade of six arches on the second story, convey to the building the Romanesque. A round corner tower with conelike roof, and transomed windows, with casemates in basement, portray the ideas of Richardson and his desire to be original. The Roman strength is given full swing, but Roman beauty is sacrificed. The J. J. Glessner dwelling is one of Richardson's strange fancies, constructed to stand anything from the fire of a mortar battery to an earthquake.

The J. H. Wrenn residence, designed by Burnham & Root, was completed in May, 1883. It is a brick house on stone basement with terra cotta ornamentation. The style is a mixture of Romanesque, Gothic and Colonial. The attic story is a gabled affair, formed far above the grand cornice.

The Lambert Tree residence on Cass and Ontario streets, designed by Peabody & Stearns, of Boston, was erected in 1883-4. It is a two-story, basement-and-attic building,

70x62 feet in area, with fronts of Long Meadow rock-faced brown stone arranged in the Romanesque style.

Early in 1884 the B. D. Arrington residence on the Lake Shore drive, north of Potter Palmer's castle, was commenced. It is a three-story-and-basement building, with fronts of Vermont marble. A central pavilion dome, carved in open work marks the facade. This is the first residence in the city to which the Moresque style was applied.

Architect Whitehouse is credited with the Cudahy, the Higginbotham, the Hutchinson, the Yerkes, the George Armour and the Loomis residences. The first and last named are considered the best works of Burling & Whitehouse, in the field of domestic architecture.

The Cudahy residence, on Michigan boulevard and Thirty-third street, was designed in 1885. It is a three-story, basement-and-attic building, in the Flemish-Gothic style, constructed of Connecticut Longmeadow stone. The Belvidere corner tower, the porte-cochere on the north side, the Roman arched entrance, with its abridged columns, the stone balconies, stone tower and grand Marat turret, springing from a beautiful corbel, all mark this house as the product of art. The cost of the building was \$125,000.

The Hinchley residence, on Michigan avenue south of Twenty-sixth street, was designed in April, 1888, by Perley Hale, to cost \$125,000. Stone is the sole building material.

The Williams residence on Drexel boulevard, south of Forty-eighth street, was designed early in 1889, by W. M. Walter. This building is 60x110 feet, with stone exteriors. The total cost was \$70,000.

The Keeney residence on Michigan avenue near Twenty-sixth street was designed in August, 1889, by C. J. Warren, and cost \$50,000.

The R. T. Crane residence on Michigan boulevard, two hundred feet north of twenty-sixth street, presents large gables, on the north and south. Light gray granite, relieved by cut and carved bands, appears in the outer walls, while the roof is Spanish tile. The main entrance is on the north side, thus leaving the entire front for library and parlor uses. The main entrance leads through the vestibule into a large square hall, with a staircase hall to the left. Opening from the hall to the west is the parlor or reception room; south of the parlor is the library or living room. The dining room occupies the south-central portion of the house, with a conservatory at the south end; east of the main hall is the billiard room, while the remainder of the first floor is occupied by the service portion of the house. The heating apparatus is a combination of steam and hot water.

The residence of Thomas Mackin, on Diversey avenue north of Lincoln park, was designed in May, 1889, by W. L. Carroll. It is a two-story, attic and high-basement structure, 82x52 feet, built of rock-faced stone and roofed with slate. Plate glass windows aid the architectural features in rendering the house one of the best class of modern dwellings.

The Heisen residence on the Lake Shore drive was designed in June, 1890, by F. B. Abbott. It is 40x70 feet in size, three stories and basement high, constructed of quarry-faced red granite, with tile roof. The interior is finished in foreign and domestic hardwood; it has mosaic floors in bathrooms, plate and beveled glass, mantels, fireproofing, hot-water heating, electric light, and all the latest improvements.

The Niblock dwelling at Kenwood was designed in 1890, by S. S. Beman. This three-story house, 35x75 feet, shows the shingle used with the same nonchalance as in the days of the Chicago Queen Anne. Within the hardwood finishing is elegant.

The Partridge residence on Prairie avenue, the Wilson and the Fuller residences, on Michigan boulevard, the Hammer residence, on Grand boulevard, and that study in St. Lawrence marble, known as Woodward's residence, on Michigan boulevard, are all clever works, credited to Architect Clay, of Wheelock & Clay.

The Moulton dwelling, on Prairie avenue and Twentieth street, the Libby dwelling, on the northwest corner of Michigan boulevard and Thirty-fourth street, and Martin Ryerson's, on Drexel boulevard, point out the prevailing ideas of Treat & Foltz.

An ideal of simplicity, as expressed in St. Lawrence marble, is found on Lake Park avenue. It is certainly an extreme one. The Q'appele style may be appropriate for it. It is the first expensive building erected in that peculiar form here, and there is hope that it will be the last. Interiorly, the house is elegant—exteriorly, it belongs to the age of the mound builders. Fortunately, the architect has many buildings to his credit, worthy of an older and wealthier city than this is.

The Cable and Tansill dwellings, constructed after designs by Cobb, show some individual independence, and the same may be said of Irving Pond's Coonley house, on the Lake Shore drive and Division street.

The Martin residence, on Michigan boulevard and Twenty-sixth street, constructed of St. Lawrence marble, after designs by J. A. Thain, is very creditable to architect and builders. It presents many parts of the ideal French chateau, with its fine corner tower and bay window, giving a recessed center, with projecting steps. The gables in the attic are, in fact, grand dormers, shared equally by square and Norman windows. An oriel over the portecochere and the triple pilastered window in the gable above, confer a Flemish idea, which is overmastered by the surroundings.

The A. P. Smith dwelling, at 4427 Drexel boulevard, designed by Wilson & Marble, is Romanesque in general, the fronting gable showing the variation. It is a style which became popular in 1889-90, and one which continues to grow in popularity. It is, in fact, a mixture of the Dutch idea, with the Renaissance and Romanesque carried out in St. Lawrence marble. A hundred of such buildings have been erected within the last year, but they are better adapted to semi-detached block residences than to large grounds.

The dual building of St. Lawrence marble, at 3978 and 3980 Lake Park avenue, designed by L. B. Dixon, shows an adaptation of the Tudor gable to the Hamburg frontal. The idea of attachment for such a style is well conceived and faithfully carried out, but such a gable never can be in accord with a level city. It is out of place between the Alleghanies and the Rocky mountains.

The Bartlett residence, in rock-faced stone, is a building of the Romanesque and Venetian. The square tower or pavilion, under hip roof; the entrance and loggia, are all from Italy.

The Hill residence, with its front gable and the mimic tower, incorporated with bay, all

in rock-faced stone, with stone transoms in the doors and windows of one and two stories, is an independent ideal.

The Loomis residence, on Lake Shore drive, designed by Burling & Whitehouse, in June, 1890, is constructed of pressed-brick, Bedford rock and Roman tile. It shares with the Mackin residence in the finer architectural details, and by some architects is considered superior to the older house referred to.

The \$100,000 residence of Nelson Morris, on Michigan boulevard, was designed in May, 1891, by L. B. Dixon, after Renaissance forms. It will be of granite or marble and have carved ornaments. The interior will be finished in mahogany, quarter-sawed oak, cherry, bird's eye maple, marble wainscoting, mosaic floors, and will have electric light and steam heat.

Plans for a three-story-and-basement house on Michigan boulevard, for A. M. Rothschild, were made in June, 1891, by L. B. Dixon. It will be of St. Lawrence marble, with red slate roof, and have hardwood interior finish, marble wainscoting and mosaic floors. The cost is estimated at \$60,000.

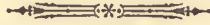
The John Griffith residence, on Michigan boulevard near Twenty-sixth street, was designed in June, 1891, by S. S. Beman. The facade is to be in stone. The same architect prepared plans for a house to be built on Michigan boulevard, near Eighteenth street, at a cost of \$35,000. The front will be of cut stone, while the interior will be designed and finished on a scale of elegance in keeping with that of the many fine houses now being erected in this city.

Edbrooke & Burnham prepared plans for a \$30,000 residence, to be erected by W. B. White, at the northeast corner of Grand boulevard and Boulevard place. They also prepared plans for a residence for G. F. Gosman, to be erected in Kenilworth.

The Condit residence, on the Sheridan drive, was designed in 1891, by Wilson & Marble, to be an exponent of the classic Renaissance. It is a two-story, attic-and-basement house, 60x66 feet in area, constructed of red Portage stone. The projecting porch, grand stoop, corner tower and oriel are all well conceived. The interior finish shows hardwoods, mosaics, and marbles.

But why continue the list. Residence after residence on the boulevards afford a study in domestic architecture, which would have to be noted on the spot or forgotten forever. Ideas of architecture, from the days of the Ptolemies to 1891, are outlined in those fine homes, and a good deal of what is original in the circle of Chicago architects manifested. Begin at Jackson street, ride south to Thirty-ninth street on the boulevard, thence east to Cottage Grove avenue and south on Drexel boulevard to Fifty-first street, and you are in possession of a first knowledge of the city's architectural dwellings. Another day or two devoted to the North Side as far as Evanston strengthens this knowledge, and then you are prepared for study. A year might be devoted to noting the varied details of the houses before writing a description of each, and even then many special trips would be necessary to confirm or refute the record of former travels among them. Enough to say that they show the independence of Chicagoans in home building. Each one is, in or about, what the owner desired and as such is the expression of his conception of architecture just so close as the architect might permit his fancy to wander.

CHAPTER VIII.



MODERN MISCELLANEOUS ARCHITECTURE.

NO other great city of the world exhibits the Commercial style of building carried to such extremes as in Chicago, and nowhere else has it overshadowed the ecclesiastical idea so completely. It has been stated, time and time again, that this city has little or nothing of which to boast in the form of church buildings. The statement has been emphasized by the press of rival cities. It is erroneous generally. Chicago can now boast of many churches as architecturally correct, and as well constructed as the great majority of those of the rival American cities to which her critics point. The condition of ecclesiastical architecture here has been related in the first chapter. It is not wholly in keeping with Chicago, but it is all that the misfortunes of youth and fire permit. To make this clearer the following reminiscence is related: In 1873 or 1874 E. Welby Pugin, the English architect, waited on the late Bishop Foley and presented plans for his proposed cathedral. While the bishop was considering the question of reproducing here one of the great works of the Normans in England, Henry L. Gay inquired of him if he intended to accept such plans. The bishop's response was prompt and emphatic. He said, "Were some one to present a California gold mine to me I would not hesitate a moment in adopting them."

In this chapter a description of each important church and a few of the smaller houses, completed since 1879, is given.

St. James' original church was erected in 1858, under the supervision of William Donohue, at a cost of \$3,000. At that time it was considered a great improvement to the prairie between Twenty-sixth and Twenty-seventh streets on the east side of Prairie avenue. Immediately after the fire the present bishop of San Francisco determined to raise a building which would reflect credit on western architecture, and in 1880 did complete a pure Gothic stone house on Wabash avenue at an expense of over \$110,000, leaving the spire to be constructed by others. The school building adjoining on the north cost about \$25,000, and the residence on the south about \$10,000.

In 1881 a church for the Swedenborgians was begun on Van Buren street east of Wabash avenue, and in 1882 completed at a cost of \$60,000. The heavy stone front shows some attention to architectural form, and appears to be the only part of the house where art was introduced. The interior is arranged after the form of an ancient basilica.

The corner stone of St. John's church on Eighteenth and Clark streets was placed October 7, 1877, and on October 2, 1881, the building was completed. It was one of the very first of the great modern stone churches of the south side, and, except St. Bridget's to the southwest, was the first true monument to thirteenth century architectural design in that section of the city. The building spirit was Rev. John Waldron, who saved Clark street from the rapacious Michigan Southern railroad depot company. The old church of 1859 and the frame school building of 1864 disappeared to make way for the great buildings of this parish.

The Sixth Presbyterian church, a consolidation of the Ninth and Grace societies, built a neat stone house on Vincennes avenue in 1879-80, at a cost of \$18,000.

The present \$12,000 Lincoln Street Methodist Episcopal building was erected in 1881 on the southeast corner of Ambrose and Lincoln streets, and the older building sold to the Swedish Evangelical Lutherans.

The Church of St. Procopius on Eighteenth street and Allport avenue is a large brick building erected in 1882 at a cost of \$45,000. An old house was moved to this site in 1877 from Halsted street near Nineteenth. This was transformed into a schoolhouse on the completion of the brick building. The building on Illinois street near North Market street was erected in 1882-3 by the Italian congregation of Assumption parish. Milwaukee bricks with courses of colored bricks are shown in gable and tower. The style is Gothic, shorn of its superfluities and modified to take its place in a city block.

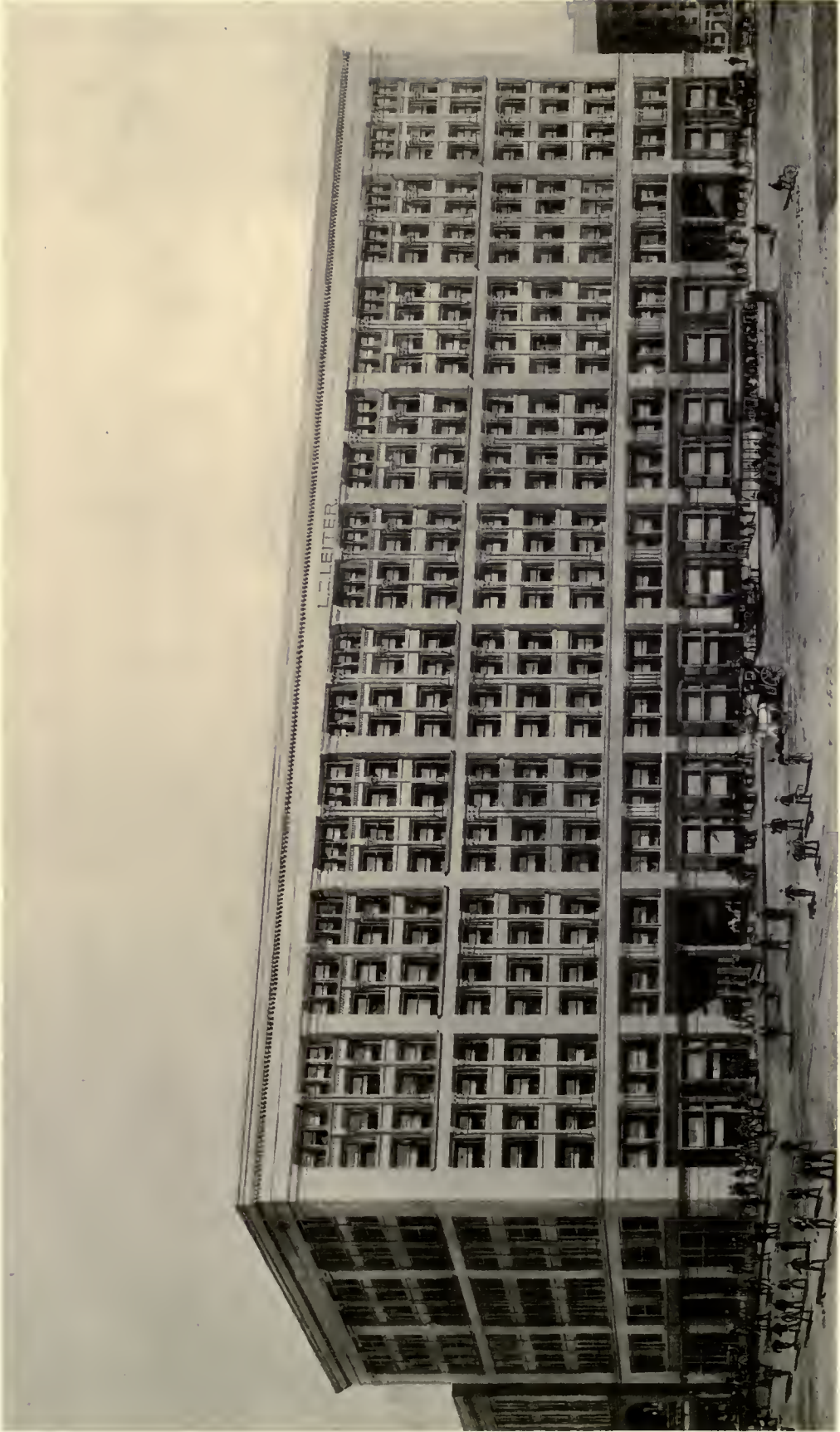
The Salem Evangelical church erected a \$14,000 brick structure in 1880. German United Evangelical (St. Peter's) society improved their house in 1883 so as to present some sign of an architect having dealt with it.

The Portland Avenue German Methodist Episcopal society built a two-story brick house on the southeast corner of Portland avenue and Twenty-eighth streets in 1883 at a cost of \$17,000.

The Central Baptist church has risen from very humble beginnings. In 1882-5 their first building to which the name church could be given was erected on Belden avenue and Halsted street. It presents novel architectural forms and partakes in a large degree of the Queen Anne style. The First German Baptist society erected a brick building in 1884, at a cost of \$13,000, on Burling and Willow streets. The La Salle Avenue Baptist society erected a brick house for worship in 1884-5, having sold their building and lots on Division and Sedgwick streets for \$70,000.

The Swedish Evangelical Lutheran Salem church sold their little frame house of 1869 on Bushnell street in 1884, and erected a large brick house on Portland avenue south of Twenty-eighth street in 1884-5. This building cost about \$33,000.

St. Clement's Gothic church, near the corner of State and Twentieth streets, was built in 1884 for George A. Armour. It is an ornamental frame house with metallic shingle sheathing, showing many original points of design. In 1891 the structure was moved westward twenty-five or thirty feet, out of the right-of-way of the elevated railroad.



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St. Malachy's church, a large, rock-faced stone building, Gothic in form, on Western avenue and Walnut street, was completed in December, 1884, and shortly after a stone school building was erected, the cost of both houses exceeding \$100,000. In 1882 the frame building, then known as "the Ark," was raised. The department of buildings gave the permission, but the fire department objected to the erection of a frame house there, and to anticipate injunction proceedings, Rev. T. P. Hodnett summoned two hundred men and fifty boys, who, within seven hours, on July 3, 1882, completed the building. The new building presents many of the details of the Norman-Irish style of the twelfth century. The linteled gateway between the buttresses in center of front gable, the dwarf lancets in broach and the peculiar bell tower and spire point out its origin. The central window is flamboyant, as opposed to the perpendicular. The ivy covering gives to the Illinois rock-faced walls the appearance of age, and the whole exterior is that of a modern parish church in the Irish provinces.

The Church of the Epiphany erected a house of worship on Throop street in 1868. In 1885 the ornamental, rock-faced brown stone building was erected, on the southeast corner of Ashland avenue and Adams street. Some of the features of Norman form are well brought out, such as the low side walls, the high gables, tiers of arched windows or arcades and compact tower, belfry and spire. The heavy batter brown stone walls of the basement, the round and square buttresses, the round and square windows, heavily transomed, are all Norman-Romanesque, well designed and well constructed.

Zion Hebrew congregation's temple, on Washington street and Ogden avenue, was erected in 1884-5, at a cost of \$60,000. The Moresque style was adopted for this building, and the contractor, with the aid of Adler & Sullivan and of the pressed brick and terra cotta manufacturer, gave to that section of the city its best specimen of Spanish architecture, as it was known in the days of the occupation of Spain by the Moors. The temple is 65x120 feet in area.

The Western Avenue Methodist church was erected in 1884-5, at a cost of \$40,000. In 1871 the first house of this society was moved to the corner of Western avenue and Monroe street. On its site, the painted red brick building of 1884-5 stands—its square, pinnacled tower, nineteenth century Gothic dress, hip roof and stained-glass windows telling of the attempts of the period in the far western sections of the city. Marie chapel (Methodist), on Wentworth avenue and Twenty-fourth street, was erected in 1885, at a cost of \$40,000, as a memorial of Marie, the daughter of H. N. Higginbotham.

The house of the First Presbyterian society, Lake View, was designed by J. C. Cochrane, in 1885. Pressed brick and terra cotta were used in the exterior walls. The auditorium is 60x85 feet and fifty-two feet high, the roof being carried on two trusses, supported by two columns, while the tower, twenty-two feet square, rises one hundred and thirty-five feet.

The Leavitt Street Congregational church, a building in the Norman-Gothic style, was designed in September, 1886, by Edbrooke & Burnham, to cost \$20,000. The rock-faced Lemont stone exterior and wainscoted interior of this house show substantial workmanship, and the architectural ideas well brought out. The church was completed in 1891.

The Second Universalist church was erected on Robey street and Warren avenue in 1885-6 at a cost of \$50,000.

The Grant Place Methodist Episcopal building, on Halsted street, was erected in 1886 at a cost of about \$50,000.

St. Paul's church, on Prairie avenue and Thirtieth street, designed in 1886 by Burling & Whitehouse, is one of the latest exponents of Norman ecclesiastical architecture. Access is had to the building through two porches opening into a loggia or vestibule, semicircular in form, lighted by a series of small windows pierced in the stone-work. This porch is connected with the church by a glass screen in the wall, producing a rich effect of coloring. The cloister on the north side forms a pretty effect and gives convenient access to the transept entrances of the church. The building is cruciform in shape and at the intersection of the nave and transepts is surmounted with a lantern forty feet wide, which is so formed as to be octagonal in shape and pierced with many small windows. This gives a pleasing effect of light in the church. The interior is well treated with terra cotta, tile and marble and some plaster for decoration. Four large arches supported on dwarf stone columns form the base to the lantern.

The Congregational church on Drexel boulevard and Fortieth street presents architectural and structural features as uncommon as they are modern. Well-stone is used in the fronts with effect. A round tower with conical roof, a square tower with open belfry, a recessed balustrade extending from pillar to pillar, columns in the portico or parvis, and yet far removed from the Second Pointed style as adopted by the Congregationalists. Rose windows and pointed arches point it out as Gothic, too ornamental for the Scotch school. The exterior is pretty and takes the eye of the boulevardier, where massiveness or magnificence would fail to attract attention. In 1886 the new church building was commenced for the French congregation of Notre Dame parish. The building is architecturally excellent, but the interior is the repository of decorative art.

The pressed brick structure on the southwest corner of Elm and Milton streets, 52x79 feet, was designed for the Baptists by Ostling Brothers, in May, 1888, to cost \$20,000.

In 1886-7 the Church of the Holy Angels, on Oakwood boulevard, was commenced for Rev. D. A. Tighe. In August, 1888, plans for its completion were furnished by J. J. Egan, which provided for the conversion of the upper part into an auditorium for the purposes of worship, pending the erection of a new church building.

In August, 1888, plans for the building of the Second Methodist Episcopal church at 325 Center street were made by C. M. Palmer. It is built of Wisconsin variegated sandstone. The Methodist Episcopal church on the southeast corner of Park avenue and Robey street was designed by J. A. Woollacott & Son. This house is 57x120 feet, with spire rising to a height of 180 feet. The exterior walls are of brown stone.

In August, 1888, the Catholic congregation of Englewood on the Hill purchased for \$16,000 from the Baptist association, a frame church which cost originally \$80,000. This house was moved to the corner of Sixty-seventh and Bishop street.

The Evangelical Lutheran Emmaus society erected a temporary building in 1888, pending the construction of a \$40,000 brick-and-stone building in 1888-9, after plans by Architect Kley. The tower and spire provided for in the plans, rise to a height of 130 feet.

The Normal Park Baptist church was designed in 1888 by J. T. Long. It is a Romanesque structure in Tiffany pressed brick and Bedford stone trimmings. The auditorium has a seating capacity of five hundred and the class-room of three hundred. The interior finish is in red oak.

In June, 1888, plans for the church on Forty-fifth and Atlantic streets were made by L. J. B. Bourgeois. This is a \$50,000, Romanesque-Byzantine octagonal building, eighty-five feet in diameter, constructed of Indiana pressed brick (yellow), with Michigan sandstone facings. The roof or dome is a model of engineering skill. From the floor to the roof is one hundred and twenty-one feet, and obstructions, such as pillars, are obviated by the use of iron trusses designed by the architect.

The Church of Our Savior society erected a house on Fullerton avenue, near Larrabee street in 1888-9 at a cost of \$40,000. The building as designed by C. J. Warren, is 80x170 feet with tower one hundred and sixty feet high. White stone glass, electric lights and furnace heat are features of this house.

The Universalist church on Stewart avenue and Sixty-fifth street is a brick-veneer structure, designed by T. N. Bell, in May, 1889, erected at a cost of \$17,000. An auditorium with a seating capacity of four hundred, parlors, schoolrooms, kitchens, etc., occupy the floor space which is 72x118 feet. The stained glass windows of this house are very much superior to what its style and construction merit.

St. Alphonsus' church, on Southport and Wellington avenues, was designed in 1889, by A. F. Boos. It is a pressed brick house with Bedford stone trimmings, erected at a cost of \$40,000.

The First Presbyterian society of Hyde Park demolished their old church in 1888, and in August, 1889, placed the corner stone of their present house on that site (southeast corner of Washington avenue and Fifty-third street). The original plans by Gregory Vigeant, show the church proper to be 80x92 feet, and the whole structure 95x135 feet, with a seating capacity of one thousand and fifty persons in the auditorium, two hundred and fifty in the gallery over the vestibule, and five hundred in the schoolroom. The architectural treatment is mainly Gothic, or rather a very wide interpretation of Romanesque forms. The two fronts show rock-faced buff Bedford stone, and this material is used in the square tower and pillars of the open belfry with effect. The interior finish is in hardwood, and stained glass is used in the principal windows.

The Congregational church on Paulina street, south of Taylor street, was designed by William Thomas, in November, 1890, to cost \$12,000. It is a 60x96 foot gabled structure of brick with Rockford stone facings and slate roof.

In the fall of 1890 G. Isaacson made plans for St. Paul's Norwegian Evangelical church on North avenue, near Leavitt street. The estimated cost of this brick structure

was \$25,000. The building is pushed forward to the sidewalk line, and this idea of crowding is carried into all its parts. The style is a modification of Gothic and Romanesque, rendered in red pressed brick.

In November, 1890, the beginnings of the new railroad chapel, on the east side of Dearborn, south of Twenty-eighth street, were made. It was completed in May, 1891.

St. Monieo's church, on Dearborn and Twenty-fifth streets, was designed by architect Wegeman, in November, 1890. Exterior ornamentation is avoided, but plainness of the structure is architectural. In March, 1890, plans for the massive church building on Jackson street and Albany avenue, were made by Julius Speyer, for the Servite fathers. The exterior walls of cut stone, pressed brick and terra cotta, embrace an area 272x145 feet. Two great towers, each two hundred and ten feet high, and a massive dome, two hundred and sixty feet high, and seventy-five feet in diameter, are the leading architectural features, rendering the structure a fine specimen of the Byzantine. The cost of this magnificent structure is estimated to be over a half million of dollars.

The new Catholic church building at Pullman, 70x125 feet, with tower one hundred and thirty feet high, was designed by S. S. Beman, in December, 1889. The estimated cost is \$50,000. In August, 1890, plans for the large brick-and-stone house of St. Boniface German Catholic congregation were presented, and work on the new building commenced.

The present church of St. Elizabeth claims very humble beginnings. In 1881 the frame church building of St. Anne's parish was moved from the corner of Fifty-fifth street and Wentworth avenue, to a point on Dearborn street near Forty-first. In the summer and fall of 1884, a large brick house was erected on the northeast corner of State and Forty-first streets, for school and church purposes, at a cost of \$25,000, and in November the old building was abandoned. The new building on Wabash avenue and Forty-first street was commenced in 1890, from plans by J. J. Egan. Rock-faced stone is used in the exterior and in the two towers, which are carried upward one hundred and forty feet. The building has a frontage of seventy feet on Forty-third street. It is one hundred and fifty feet deep, and forty-two feet from the floor to roof. The Romanesque style of architecture is observed throughout; but looking at the exterior walls, as completed in 1891, they are heavy and symmetrical enough to warrant the title Roman style.

The African Methodist Episcopal church, on Dearborn and Thirtieth streets, was completed in the summer of 1891. It covers 59x110 feet, and is adorned with a corner tower that rises one hundred and thirty feet high. The exterior is constructed of pressed brick and buff Bedford stone, with slate roof, and windows of stained and cathedral glass. The large ornamental windows, in connection with the other attractive features of the structure, give it an ecclesiastical appearance. The main auditorium is thirteen feet above the sidewalk, and has a seating capacity, including the gallery, of 1,000; on the same floor is the pastor's study. Level with the gallery on the third floor is a lyceum 25x40 feet. The lower floor is occupied by Sunday-school rooms, twelve classrooms, library, diningroom and kitchen, which have been so arranged with sliding shutters that they can be made into one room. The building

is heated by steam, has gas fixtures, pipe organ, and contains the latest improvements. It cost \$30,000.

The Methodist Episcopal church of Montrose was completed May 18, 1891. It is Gothic in form, with broach, is finished in Georgia pine and Louisiana red cypress, with furniture in quarter-sawed oak trimmed with black walnut. The Emmanuel Methodist Episcopal house, on Oak avenue and Greenwood boulevard, Evanston, was commenced May 16, 1891. As designed it is to be a \$60,000 building, constructed of red sandstone.

The church erected by the Bohemian congregation (Catholic) near Douglas park, was designed in May, 1891, by A. Druiding.

An interesting building, for Baptist worship, was erected on the southeast corner of Wabash avenue and Twenty-eighth street, in 1890-91, after plans by William W. Meyers. The stone for this structure was quarried years ago, and used in the Douglas or Baptist university, until the demolition of that peculiar pile of masonry. The new building is 49x150 feet, with flanking tower. The auditorium is 44x102 feet, and the school, reading and lecture-rooms large and airy.

The Kehilath Anshe Maariv, or synagogue, on Thirty-first street and Indiana avenue, was completed in June, 1891, at a cost of about \$110,000. The Romanesque arch marks the entrance and third story. In fact below the entablature the building is Romanesque, and presents some adherence to recognized form; but above, in the attic, a hip-roofed box, pierced by sets of triple windows, appear. This section partakes somewhat of the Venetian, and is supposed to supply the place of a dome. Never before was a Venetian form so out of place.

The Fourth Baptist church, on Ashland avenue, is a Norman-Gothic structure, in rock-faced red sandstone, with hip-roofed tower, bartizan and arcade. In the gable are three Norman windows, with four attached pillars each side of the high central window. The architect, C. F. Whittlesey, shows independence in its treatment within and without. While doing wonders in a small space, and in rustic stone, he has not overlooked proportion. It is a building creditable to the congregation and the architect.

Plans for St. George's church on Thirty-ninth street and Wentworth avenue were perfected in July, 1891, by A. Druiding. The building has a frontage of seventy-two feet and is one hundred and forty-seven feet deep. The front, of pressed brick with blue Bedford stone trimmings, shows three entrances. The roof is covered with slate. The main tower is one hundred and sixty-five feet and the second tower one hundred and ten feet in height. The interior is finished in oak, with a rich grained ceiling. The nave is forty-six feet high, while the aisles are thirty-four feet. Such is a statistical description of a grand Gothic building which the people of this parish have given to the city.

The Byzantine-Romanesque church, St. Mary's of Perpetual Help, the erection of which was commenced in 1890-91 on West Thirty-second near Ullman street, was designed by Henry Engelbert, of Detroit, Mich., to cost \$150,000. The extreme length is one hundred and seventy-five feet, width through the transepts one hundred and six feet, forming in the floor plan a Latin cross with circular apsis of forty feet in diameter for the sanctuary in the

rear with two sacristies adjoining. In front it has two towers for the bells, fifteen feet square and one hundred and forty-eight feet high to the top of the cross. The floor plan is divided into a nave forty feet wide and two aisles twenty feet wide; the nave is divided lengthways into three squares of forty feet each, and at the intersections of the middle square are columns two feet in diameter, so that there are only four columns carrying the roof. Over these squares are three circular domes forty feet in diameter; the two at the ends are inside the roof, sixty-four feet high, lighted from the top, and the center dome extends through the roof, ninety-four feet high to the ceiling, and forms above the roof a dome and cupola forty-four feet in diameter, with sixteen windows. It is one hundred and sixty-two feet high to the top of the cross. The foundations are built of concrete, iron beams and limestone, and the superstructure of buff-colored brick, with Ohio sandstone trimmings. The roofs are covered with Pennsylvania black slate, and the finish of dome, cupolas and turrets is done with heavy galvanized sheet iron, all painted in imitation of stone. The inside is richly finished with ornamental stucco work, richly molded cornices, caps and bases, ribs, spandrels, etc., with a view to future fresco painting. The interior woodwork is mostly done in hardwood and finished in hard oil. All the windows, of which there are ninety-two, are filled in with rich stained glass, the larger ones with life-size figures, emblems, monograms, and other ecclesiastical subjects in a superior manner. The seating capacity is twenty-five hundred on the floor and four hundred in the gallery. The heating is accomplished by hot-water system and the lighting by electricity. This house opens a new field for the architects of the city and points to the continued growth of ecclesiastical architecture here. In 1885 an old frame church building was moved to the site of this grand building by the Polish congregation as their initial attempt. The present temple tells of a half decade's progress.

There were two hundred and twenty-one common school buildings owned by the city at the beginning of 1891; the greater number of which were erected within the last decade. One of the latest of such buildings, that on Perry avenue, south of Sixty-fifth street, points out the transition from the old style. Formerly common brick or pressed brick with stone trimmings, were piled up in regulation shape, a little variation being observable in buildings close by. Thus, in a school building on Wabash avenue and Sixty-first street a Tudor gable is found, while farther north on Prairie avenue a Gothic or pavilion roof appears. In the new structure, referred to above, pressed brick and terra cotta are used with effect. The area of this two-story, basement-and-attic house is 65x149 feet. It is divided into fourteen rooms, finished in sycamore and red oak and equipped with sanitary appliances. A small gabled red-brick schoolhouse stood on the site for some years. In 1883 it became too small, and a long frame house, built on posts in the swamp, was erected. In 1889 both buildings disappeared to make way for the present \$40,000 house. Another modern house was erected in 1891 on North Fifty-ninth street and Winthrop avenue, at a cost of \$60,000, and in and round the old city limits this work of school building has been carried on unceasingly.

In April, 1891, plans for the Northwest Division high school building were completed by Flanders & Zimmerman. This \$100,000 pile of pressed brick is the pioneer of large secular

buildings in the district, the center of which is the corner of Potomac avenue and Davis street.

Enterprise in this direction is not confined to the common-school authorities, it extends to the denominationalists. In former pages their efforts of 1843 and later years are related, and now, looking round the city, the buildings of denominationalists at Evanston, Morgan Park, and within the limits are architecturally superior to those of the common-school authorities. One great stone building on Wabash avenue is completed; work on another group of buildings on Lexington and Ellis avenues has just been commenced.

The modern granite and Bedford stone building on the northeast corner of Wabash avenue and Thirty-fifth street, known as the La Salle institute, was completed in May, 1891, in all its parts, except the upper structure of the central tower. This grand building, 100x163 feet, was designed by J. J. Egan, and erected by McDermott & O'Brien at a cost exceeding \$125,000. There are sixteen large classrooms, with study halls, lecturerooms, chapel dormitories and livingrooms for the faculty. The finish and equipment of the interior is modern.

The plans for the new Baptist university were completed in June, 1891, and presented to Secretary T. W. Goodspeed by the architect, Henry I. Cobb. A combination of the Venetian and Romanesque is manifested in the dormitories and recitation hall. He suggested granite as the material, and in the plan for the lecture hall, provided for a four-story structure, massive in its general features, with heavy square windows in three stories and arcades in the fourth story and high halls. The roof is of tile, with a heavy carved cornice. The total length is two hundred and seventy feet and the average width sixty feet. On the first floor provision is made for a receptionroom, general offices and the offices of the faculty and board and of the executive offices of the university. There are six lecturerooms, and a large lectureroom, 36x61 feet, with a seating capacity of two hundred and fifty. In the rear of the building there is a wing, 54x80 feet, to be used as a chapel. The second, third and fourth floors of the main building and of the wing are to be cut up into recitation rooms. The university dormitory is of granite, with tiled roof, corresponding to the lecture hall. The length is three hundred and fifty feet and the width thirty-two feet, except at the center and at the ends, where the building is widened to forty feet, to break the lines. It is four stories, divided into bedrooms and studies, and will accommodate one hundred and fifty-six students. Mr. Cobb's divinity dormitory is similar in plan to the first, except that it has a total length of two hundred and eighty-eight feet. In the university dormitory the building is divided by six fire walls, practically cutting it into so many separate buildings. In the divinity dormitory the corridors on each floor run from end to end. The university hall, the chapel, the observatory, library, gymnasium, women's dormitory and other buildings all find a place in the general plan. The site is bounded by Fifty-seventh street, Midway Plaisance, Ellis avenue and Lexington avenue.

The school building on Oakley avenue and Thompson street is a large substantial structure, five stories high, with square tower seven stories high. It was completed in September,

1890, to accommodate eighty-five boarders and the community known as the Sisters of Christian Charity, for whom it was designed and built.

The Baptist Union Theological seminary at Morgan Park, the Chicago Manual Training school, the Chicago Theological seminary, the Garrett Biblical institute, the German Lutheran Theological seminary, the McCormick Theological seminary, the Northwestern university, Western Theological seminary, St. Ignatius college, have each a building or collection of buildings devoted to education.

The convent buildings of the city, devoted to educational and philanthropic purposes, present the monastic-Gothic forms generally. The Sacred Heart buildings on Taylor and North State streets are large and well proportioned. The Sisters of Mercy have great buildings on Wabash avenue, Oakley avenue, Belmont avenue, Brighton park, Wallace street, South Chicago, Oakwood boulevard and Wallace street and Twenty-fifth place. The Sisters of Notre Dame erected an architectural house on Sibley street and Vernon park place in 1885-6. They have convents also on Lincoln and Southport avenues, Hudson avenue, Wentworth avenue, Twenty-fourth place and Noble street. The convents of the Third Order of St. Dominic are located on North Franklin street, corner of Hermitage avenue and Jackson street and on Kimbark avenue. The Little Sisters of the Poor have a number of large buildings; the Sisters of the Good Shepherd, the Franciscan Sisters, the Poor Handmaids, the Servite Sisters, the Sisters of Charity (B. V. M.), the Sisters of the Holy Nazareth, the Sisters of St. Dominic, the Sisters of St. Joseph, the Sisters of St. Vincent de Paul, the Religious of the Holy Heart, the Sisters of St. Benedict, and the convent at Washington Heights, each have one or more large buildings devoted to education, while many other of their buildings are devoted to charitable uses. The new sisterhood of the Protestant Episcopal church, known as the Sisters of St. Mary, have an establishment at 2406 Dearborn street.

The St. Ignatius college building, on Twelfth street near Blue Island avenue, is a monument to the educational enterprise of the builders. Going southwest from the modern section of the city, and standing on the northwest corner of the streets named, one must admire the chaste outline of that large house, raised above the prairie almost twenty-five years ago, and ask himself whether the projectors and designer were not prophets in their own land and their own days.

The College of Pharmacy building at 465 State street, though erected in 1884 and completed within the last few years, partakes something of the character of houses erected south of Van Buren street in 1872-4. The old building was destroyed in 1871.

The building of the College of Physicians and Surgeons on Honore and Harrison streets presents features foreign to the other medical college buildings of the city. A tower one hundred feet high, and a stately stone front rising four stories, point to that erratic period early in the eighties when the so-called Queen Anne craze took possession of physicians as well as others. It is one of the best specimens of the so-called style.

The Woman's Medical college on Lincoln street opposite the county hospital, the Chicago Dental college, in connection with the Dental infirmary, 22 and 24 Adams street, and the Homœopathic college on Wood and York streets are small buildings.

The Athenæum building adjoins the Art institute with front on Van Buren street. As remodeled, it is a seven-story brick house, 91x97 feet, with an eighteen-foot alley on the east and south sides. Light rather than architecture appears to have been the object of the builders or remodelers, and they attained this object. The interior is well arranged for the purposes of the athenæum. It was designed in August, 1890, by Thomas Wing, to cost \$85,000, and completed May 1, 1891.

There are twenty-one hospitals in the city, the great ones being large buildings. The buildings of the Alexian Brothers, the Marine hospital, the Bennett hospital and the Mercy hospital, are hitherto noticed. The Hahnemann hospital was erected in 1884, opposite the site of the amphitheater destroyed by fire October 21, 1883. The Augustana, the Emergency, the Homœopathic, the German, the Eye and Ear infirmary, the Porter Memorial, the National Temperance, St. Joseph's and the Woman's hospitals, are comparatively modern institutions. The Cook county hospital, fronting on Harrison street, occupies the square bounded by Wood, Lincoln, Polk and Harrison. The buildings are constructed of pressed brick with stone trimmings, show four main structures or grand pavilions, with attic stories and high basements. The addition, or the five-story front building, completed in 1884-5, shows a heavy tower or parvis turret. The Cook county infirmary, at Norwood Park, a large brick house in Gothic form, was built in 1881-2, and the Insane asylum, at Jefferson, in 1870-73. The Cook county infirmary was completed in 1883, at a cost of \$150,000, after plans by J. C. Cochrane. McGraw & Downey were the builders. In May, 1891, Julius Wegeman completed plans for the new Detention hospital, which the board of county commissioners decided to build. It stands on the county hospital grounds, at the corner of Wood and Polk streets, and conforms architecturally to that building. It has a frontage on Wood street of one hundred and on Polk of eighty feet. It is two stories high, constructed of pressed brick with cut-stone trimmings, at a cost of \$35,000.

The Michael Reese hospital (Hebrew) was first established in 1866, in a building on the corner of La Salle avenue and Chili street. That house was burned in October, 1871, and ten years later the large structure on Twenty-ninth street and Groveland avenue was erected, at a cost of \$40,000. In May, 1891, plans for the new pressed-brick, three-story-attic-and-basement building, at the foot of Twenty-ninth street, were made by S. B. Eisendrath.

St. Luke's hospital (Protestant Episcopal) was established in May, 1871, at 1434 Indiana avenue. In 1872 the Chicago Relief and Aid society donated grounds for a building on State street, near Thirty-seventh. Nine years later N. K. Fairbank donated one hundred feet on Indiana avenue, and in 1885 the four buildings were erected thereon.

The third Protestant hospital established here was that by the Presbyterians. In 1883 a location was presented, and plans for a building made. S. V. Shipman, the architect, commenced work thereon in 1884, and on August 20, that year, a portion of the building (the two wings) was completed. As completed, later, the red pressed-brick, four-story-attic-and-basement building was connected with Rush Medical college. It presents some pleasing architectural features, and is a study in the arrangement of heating and ventilating apparatus.

In June, 1888, plans were made for a six-story-and-basement building. The Renaissance style was observed, and a tower and spire, one hundred and twenty-eight feet high, outlined. The first floor is devoted to a grand hallway, lined with marble, reception, managers' and officers' rooms. The fifth floor has a large hall, capable of holding four hundred people. The rest of the floors, with the exception of the sixth, are used for patients, and the sixth floor for dissecting purposes.

The Wesley hospital is the fourth Protestant house erected for hospital purposes in Chicago. This building was erected in 1891, on the northeast corner of Dearborn and Twenty-fifth streets. It is five stories in height, 225x106 feet, constructed of brick, with fronts of pressed brick and terra-cotta facings. Each of the three wings has a row of bay windows on the west front, resting on terra-cotta brackets, and extending to the spring of the roof. Two are steeple gabled, and the north wing has an octagonal tower.

The hospital for women and children, on Adams and Paulina streets, was designed by Otto H. Matz. It is a five-story-and-basement building, 150x44 feet in area, constructed of St. Louis hydraulic brick with red sandstone and terra-cotta trimmings. A mansard roof, in slate, with great pedimental dormers, a central pavilion, corner towers, octagonal in shape, with pointed roofs and ornamental finials tell how far French art controlled the architect. A Norman doorway, with a window each side and a balcony above, holds the principal place in the pavilion. The house was completed early in 1886.

St. Elizabeth's hospital building, on the southeast corner of Davis and Thompson streets, is one of the great works of charity. In 1890 Bauer & Hill designed the chapel and awarded contracts for completing the north wing. The building is a massive architectural one, a marvel of the enterprise of religion and charity. The Convent of the Poor Handmaids, close by, is another massive building.

The Home for Unemployed Girls, on Market and Elm streets; the Guardian Angel Orphan asylum, at Rose Hill; the Holy Family Orphan asylum, on Holt and Division streets; the Home for the Aged, on Harrison and Throop streets; the House of Providence, adjoining Merey hospital; the House of the Good Shepherd, on Market and Hill streets; the Servite Sisters' Industrial Home for Girls, 1396 West Van Buren street; St. Joseph's Asylum for Boys, Crawford avenue, near Diversey street; St. Joseph's Home for the Friendless, 409 South May street; St. Joseph's Orphan asylum, Thirty-fifth street and Lake avenue; School for Deaf and Dumb, May and Twelfth streets; St. Vincent's Infant asylum and Maternity hospital, 191 La Salle avenue, and St. Mary's Training school, at Feehanville, are all important buildings, and a few of them, such as the last named, may be classed among the greatest buildings devoted to charity in the Union. The Chicago Industrial school, on Forty-ninth street and Indiana avenue, a large pressed-brick building, was completed in 1891, from plans made by J. J. Egan, in July, 1890.

In October, 1890, plans for an addition to the House of Providence, Elm and Market streets, were made by Bauer & Hill. The corner building, erected four years ago, adjoins the new structure, which is a four-story-and-basement house, with atrium and chapel. The

material is rock-faced Bedford stone and Indiana pressed brick for the fronts. The chapel is Romanesque, with groined ceilings. It seats four hundred and cost \$50,000. Three or four other buildings, such as St. Paul's Home for Working Boys, might be included in this list.

The Erring Women's Refuge, on Indiana avenue, south of Fiftieth street, was completed and dedicated November 20, 1890. The new building is of brick and accommodates one hundred women. The rotunda in the center of the building is four stories high. From this there are four wings, three stories high. This home has been erected at an expense of \$60,000. The revenue which helps the trustees and ladies to keep the institution running is the rental from their buildings at Indiana avenue and Thirty-first street (erected in 1876, on the site of the old buildings purchased in 1865), one-half of the fines taken in by the city for disorderly conduct in places of a disreputable character, and what little is derived from the sewing of the girls. All the inmates are taught to sew, and some of them study music.

The Chicago Orphan asylum, 2228 Michigan avenue; Chicago Nursery and Half Orphan asylum, 175 Burling street, the Danish Lutheran Orphans' home, Maplewood; the Foundlings' home, 114 South Wood street; Home for Incurables, on Ellis avenue and Fifty-sixth street; Home for the Friendless, 1926 Wabash avenue; Industrial School for Girls, South Evanston; Industrial Training School for Boys, Glenwood Park; Illinois Masonic Orphans' home, 447 Carroll avenue; Old People's home, northwest corner Indiana avenue and Thirty-ninth street; St. Paul's home for newsboys, 45 and 47 Jackson street; Evangelical Lutheran Orphan asylum, 221 Burling street; the Soldiers' home, South Evanston, the Home of Industry for discharged prisoners; the Washingtonian home for male drunkards, and the Martha Washington home for female drunkards, all denominational institutions, were built or purchased for charitable purposes; but the Washingtonian home, the Chicago Nursery, the Foundlings' home, the Home for the Friendless, and perhaps three or four of the other buildings, are all that justly may lay claim to architectural style.

Chicago can boast very little of her Venetian ventures. Fragments of the style are scattered here and there throughout the city, but in the Butler building they have been placed together. Only in 1891 was Venetian design introduced in wholesale fashion, *i. e.*, given a whole facade as distinguished from the shreds and patches which marked its former use. It is the library and readingroom erected by Edward B. Butler on Halsted street. This is a two-story structure of brick, two colors, buff and red, being used in its construction. The entrance is at the northeast corner, and one passes through a small vestibule into the reading-room, a large apartment, 31x45 feet, occupying the entire ground floor. This structure is in connection with the Hull house.

CHAPTER IX.



BEGINNINGS OF SUBURBAN BUILDING.

SUBURBAN growth is entirely dependent upon the increase of the city's population and on transportation facilities, when it is not the center of some great industry or educational institution. Hyde Park, Englewood and Normal Park became important suburbs through the overflow of the city, Pullman on account of its manufactures, Evanston on account of its schools, and Morgan Park for the same reason. The *nuclei* of modern buildings were formed in 1869-72; but the panic came to thwart enterprise and hold the extension of homes in check for almost a decade. The Green Tree tavern, built in 1833, was moved, in 1880, from the corner of Lake and Canal streets to No. 35 Milwaukee avenue. This stirring up the ghost of ancient Chicago's greatest house marked the beginning of a new building era, for while the old tavern was on rollers and the press of the city was singing its requiem, the spirit of progress was abroad. The capitalist beheld a city unable to contain itself, and, looking upward, dreamed of high buildings as a method of extending the business district without expanding its area. The man who for years was exposed to that grinding monopoly, the old Chicago boardinghouse or hotel, determined to look beyond the inside district for a home and build on the selected site a house which he could call his own. The shrewd real-estate man saw his opportunity and reopened forgotten subdivisions, erected summer cottages, sold them at fabulous prices and grew wealthy on the necessities of new Chicago. Even the railroad directors drank in the spirit of the times and introduced the suburban service. The beginnings of the modern suburbs of New Chicago were made. The original towns of Hyde Park and Lake show extraordinary advances for a single decade.

Oakland may be termed the parent of modern Hyde Park. One of the first dwelling houses in what was Hyde Park village was erected in 1853, by Charles Cleaver, on the square bounded by Oakwood avenue, Brook, Elm and Cedar streets. It was a plain structure, not much superior to the soap factory and little store built by him in 1851, on the lake shore at the foot of Thirty-eighth street. The old Oakland house, on Cottage Grove avenue and Oakwood boulevard, was quite a building in its day, and the Oakland public school, erected in 1874, at a cost of over \$15,000, a very creditable building for that time, eclipsing the Cleaver-ville \$7,000 building of 1871. The first building devoted to educational or religious purposes in that village, and indeed in the entire south division, south of Van Buren street was

built in 1854, in the vicinity of the soap factory, on the east side of Lake avenue, between Thirty-ninth street and Oakwood avenue. In 1872 this cabin structure was moved and later stood on the west side of Hyde Park avenue, south of Fifty-fifth street. In 1870 the Forty-first and Prairie avenue Presbyterian house was erected at a cost of \$9,500. In December, 1880, the building of what was the second house in northern Hyde Park, designed by an architect, was begun. Prior to that time Gregory Vigeant was asked by Rev. D. A. Tighe to prepare plans for a church building. He selected the anglo-Gothic form, and within a year, improvements, costing over \$21,000, graced the south side of Oakwood boulevard near Langley avenue. In 1884 the \$35,000 school building, on St. Lawrence avenue and Forty-second street, was erected. To-day that section of the city presents great apartment houses, a few beautiful churches, and a number of elegant homes, many of which are described in previous chapters.

Forestville was the name given to a tract extending east from Indiana avenue to Cottage Grove and south from Forty-third to Forty-seventh, but it really included the tract between the east and west streets, east of State street. Nathan Watson's cabin, on the northwest corner of Park avenue and Fifty-third street, was the pioneer building, erected about 1835. Later, S. McCarthy, James Purcell and John Hogan erected cabins. In 1856 the Hyde Park house was erected for Paul Cornell, on the lake front, south of Fifty-third street. It was a frame dwelling house, well constructed, and showed the higher idea of frame building. In 1865 it became the property of others who transformed it into a large brick house, and carried it on as a hotel until its destruction by fire in 1877. Hopkins' store, a shanty ten feet square, was built in 1856, just south of Fifty-third street, on Hyde Park avenue. The Cornell church of 1858 stood on the corner of Hyde Park avenue and Fifty-third street. It was all \$1,000 could accomplish, but it suited the simple taste of the worshipers. The pretentious stone building of the Presbyterians, erected in 1870, at a cost of \$48,000, must be considered the pioneer of architectural buildings in that section of the city. In 1871 the Forty-seventh Methodist Episcopal church was completed. In 1858-9 the Waite seminary house was erected. This was four stories high, 40x60 feet. In September, 1863, the Masonic body placed a cornerstone for a proposed frame church; but the English Protestant Episcopal bishop caused the removal of the stone, as it was inconsistent with the character of a frame house. In March, 1869, however, a neat frame building was completed. In 1857 Judge Jamieson erected a cottage on Cornell avenue and Fifty-third street, and in 1859 Leonard Jamieson erected one on Washington avenue and Fifty-third street. In 1873 was erected the South Park hotel building, on the corner of Fifty-first street and Cottage Grove avenue. It was a pleasant looking two-story-and-attic-frame structure 50x125 feet, but fell an easy prey to the fire of October 25, 1883.

The house of Dr. Kennicott, at Kenwood, was the beginning of that beautiful section of the city. It was a little frame building, erected in 1856, which would be called a squatter's cabin in later days. In 1859 Pennoyer L. Sherman built a small house, and before the close of the war a few other cottages were erected. It was not built up in a hurry like the newer

suburbs. It was platted for the purpose of making it the model suburb of a great city, and an acceptable place of residence for its wealthy people. The location is accordingly the best that could be desired, the improvements, the most elegant, while churches, schools and other accessories of high civilization are within its borders.

The tract bounded by Forty-seventh street, Cottage Grove avenue, Fifty-fifth street and Madison avenue, and north on Madison avenue to Fifty-first, thence on Fifty-first to Woodlawn, thence north on Woodlawn to Forty-seventh and west on Forty-seventh to Cottage Grove avenue, was known as Egandale. Dr. William B. Egan improved the grounds and intended to erect his home thereon. This was the first work of a landscape gardener or architect in or near Chicago, except the grounds of St. Mary's college. In 1869 a small frame building on the corner of Kimbark avenue and Fifty-fifth street was completed for St. Thomas Catholic congregation and used as a house of worship until work on the present architectural building was completed in 1890. The Baptist building on Madison avenue near Fifty-fourth street was erected in 1874 at a cost of little over \$2,000.

The Wabash avenue district, south of Thirty-ninth street, gave token of its present importance as early as 1873. In that year the Springer schoolhouse was erected on the northwest corner of Forty-first street and Wabash avenue. This was one of the great buildings of that period, and may be termed the pioneer of the large houses now to be found there. The original Oak Ridge schoolhouse was established in 1851, when there were only six buildings on South Park avenue south of Twenty-second street, and only seven houses in the entire neighborhood. In 1880-81 the school site was swallowed up in the South park system; the directors selected a new site on the east side of Prairie avenue near Fifty-third (200x200 feet), for which they paid \$7,000, and in the unpeopled wilderness erected a building which, it is alleged, cost \$43,000. The Farren schoolhouse, on Fifty-first street and Wabash avenue, dates back to 1882. It was named in honor of John Farren, who was the principal in urging the erection of a large building there, when the revival of trade pointed out the certainty of the district becoming one of the leading resident sections of the city.

In the neighborhood of the boulevard Dr. Willoughby and Messrs. Graham, McArdle and McNamara built homes on Michigan avenue, while on Wabash avenue, north of the boulevard, the Cummings and Lecson cottages were erected, followed by the houses of Mrs. Mahony and those of Kouhn, Connolly and Seavern.

Grand Crossing was raised above sea level by an accident and Paul Cornell. In 1854 an Illinois Central train ran into a Lake Shore & Michigan Southern train. The damage to the road-bed and rolling stock suggested the fact to the railroad directors that prevention was better than cure, and the order was issued, which has ever since made the crossing a halting place for all trains. In 1855 Cornell purchased land and water there with the object of establishing a manufacturing town, but not until 1871 did he put his idea in form. That year the Cornell house was erected, a square, substantial frame house adorned with heavy cornice and cupola, turned woods and moldings. In 1873 a schoolhouse was built on posts to which children were sometimes carried in boats. Ten years later the large building

known as the Madison avenue school was erected away east on the prairie, beyond the shed, known as the rubber clothing factory. The Wilson sewing machine factory was established here in 1875 in the buildings of the old Cornell watch factory, erected at a cost of \$70,000 in 1870-71. This building, while designed for a great industry, showed many fine architectural points, and, until surrounded by the tasty, natty Queen Anne cottages of modern times, stood alone on that mixture of prairie and lake, an introduction to the suburbs and to the city.

Brookline, or Park Manor, boasted of a schoolhouse in 1868, and later of a little shanty, used for depot purposes. It is practically a part of Grand Crossing. In 1875 the Methodist Episcopal society erected a church, to meet the requirements of the denomination in the two settlements. No architect was necessary in its designing, nor was there one employed. In 1884-5 a large Catholic church was erected near the crossing, which was the first modern building, if the Madison avenue school and the watch factory be excepted, in all that section.

In January, 1889, the improvement of Dauphin Park, formerly a marsh, was introduced by S. E. Gross, who began the erection of a two-story, pressed-brick block, 100x80 feet, on Ninetieth street and Dauphin avenue. This building was designed for stores, flats and opera house purposes, and cost over \$15,000.

The Hyde Park and Lake water works building was completed in July, 1882, at a cost of \$15,915. The main structure fronts two hundred and ninety-five feet on the southeast corner of Oglesby avenue, and extends back one hundred and thirty-two feet on Sixty-eighth street.

Windsor Park, Park Manor, Woodlawn and Park Ridge are new names of suburbs built up within the last ten years, in the northern half of the old township of Hyde Park.

Roseland had a church as early as 1849, when a cabin was erected near One Hundred and Seventh street. In 1853 a frame house took its place, and in 1868 a third building, almost as modest as the first one, was erected. These buildings tell the history of the progress of the Hollanders. In 1882 the German Lutherans expended \$600 on a school and church erected on One Hundred and Thirteenth street and Michigan avenue, and in 1884-5 the German Methodists erected a frame house on One Hundred and Thirteenth street and Indiana avenue, at a cost of \$1,200. The first modern building was the church of the Holy Rosary, on One Hundred and Tenth street and Indiana avenue, erected in 1883, at a cost of \$11,000. It is a large frame structure, constructed on architectural principles. In 1883-4 the Queen Anne cottage found its way to Roseland, and the prairie westward was soon dotted with grotesque dwellings.

Gano is the name of a section opened to settlement in 1887. During the year ending January 1, 1888, there were forty-three houses erected, and from that date to May 1, 1888, there were twenty-seven houses built. The name of Thomas Seanlan is closely identified with the development of this new section of the city. It was incorporated as a village in 1888, and became a part of the city in 1891.

Pullman is an architectural, economical dream, fully realized. Surveyed in 1879, it was built up in 1880, in a Napoleonic manner, that won for its projectors and architects fame.

In a former chapter its architectural features are referred to, and in a subsequent chapter its sanitary arrangement is described. It is now a city within a city.

South Chicago now boasts of several very fair modern brick structures. In 1876 it was a straggling village, but since 1882 it has been dressing gradually in city garb. From its beginnings in an Indian village to the present time it always entertained a hope of being the great city of the prairies, and now that it is a part of the great city, its hope is answered. In 1830 William See, a Methodist preacher of the region, secured a license to run a ferry across the Calumet river near its mouth, and sublet his franchise to one Hall, who conducted the business up to the time of Lieut. Jefferson Davis' report (1833), when a stronger demand for Calumet property enabled the preacher to make a good sale. That preacher, by the way, kept one pretty good eye open for business, and while he preached in Chicago, and even solemnized there the first marriage between English-speaking people, yet held his Calumet interests until he felt that the growth of the two places had progressed as far as it could reasonably be expected to, when he forsook the southern shrine and east his fortunes entirely with Chicago. In the same year, 1830, he was granted a license to run the ferry at Calumet, Rev. See solemnized the marriage of one John Mann to Arkash Sambli, a three-fourths white and one-fourth Indian girl, and Mann, believing with Davis that Calumet was the destined port of importance, returned thither with his wife of mixed races and took up the ferry where Hale dropped it. But passengers were few, and to eke out an expense account, which grew as his family increased, Mann kept a trading post on the east bank of the river, not far from the ferry and in plain sight of the bank on either side of the river, so that he could be summoned at a moment's notice. His store contained only such articles as were demanded by Indians, and for these he received in barter the various peltries the Indians brought to sell. Until 1838 Mann conducted the double business of ferryman and trader, and might have been rich; but was given too fully to imbibing in the inferior liquor which he kept for Indians, and even a wife of Indian descent could not stand it always. When the last of the Pottawatomies left the region in 1838, Arkash took her children and went with them, and Mann sank rapidly until he left the Calumet and went to Racine. The construction of a canal which should connect the Mississippi waterway was a hope indulged even then, and Stephen A. Douglas lent his influence to the selection of Calumet as the natural terminal point. Lewis Benton, a man of some means, had believed in the same selection, and in 1833 had taken advantage of Davis' choice of Calumet for a fort, and purchased the land on both sides of the river, fully believing the advancing tide of immigration would make him rich. He established a store, the first in Calumet and the only rival of John Mann's trading post on the east bank, and built a number of houses in which his employes were to live when the canal came. In 1836 he erected the Calumet house, and in 1837 the Eagle hotel was built close by at the foot of Ninety-second street. They were primitive houses in every way, not much removed from cabins. Some who came to the Calumet through unbroken forests for a thousand miles, some who came across rivers unspanned by bridge from source to mouth, some who came in hopes of finding there the shrine where Fortune

blessed her votaries, found a grave instead. On the east shore of the river, within sound and sight of the booming waves of the lake, on an elevation covered with oak trees, their tired frames were laid to rest. In regular rows, with rude wooden crosses marking the spot, just back from the sweep of the ferry-boat cable, almost at the door of Mann's trading post, the primitive cemetery was situated. In it were buried two children of John Mann and his long-suffering wife, who turned from these graves of her sons to follow her sire. There also were buried in the years that followed G. M. Jackson and his three children, W. A. Zirngibl, and many others who reached the place in that early day and hoped to see its harbor crowded with trade. In this cemetery, as the years passed, more than three hundred persons were buried. The last interment took place over twenty years ago, and time has now swept away all traces of the graves save little indentures in the sod, which seem to be calling kinsmen to remember them. August Mageritz, once a sailor, has purchased the land which Lewis Benton once bought so boastfully, and just back of the little cemetery he lives in a weather-beaten cottage among the oaks, and waits, as so many have done before him, for the tide to come in. Three hundred graves, gathered in the years when Calumet and Chicago were rivals, nestled between the river and the lake, are there without a stone or board to mark a single one.

One of the first stone buildings in the southern part of the present city was the lighthouse at South Chicago, built by the mason, Irwin, in 1851-3, three thousand feet south of the present lighthouse. The stone was quarried at Blue Island and carried on flatboats to the mouth of the Calumet. The structure showed many points of the Martello tower, and after its restoration in 1870-71 relieved the landscape, as the cabins on the low prairie formed an eyesore. The North Chicago rolling mills were begun in 1880; the prairie was raised six feet, and soon those buildings came to the aid of the lighthouse in granting further relief to the great marsh. In 1883 the large buildings known as St. Xavier's academy formed a valuable addition.

In 1860 the little church of St. Patrick's parish was built by the Rev. Thomas Kelly. Twenty years after it was remodeled and enlarged. In 1870 the little rectangular church of the Immanuel Evangelical Lutheran society was erected; in 1872 the First Congregational house; in 1882 the Swedish Methodists and German Baptists, as well as the Swedish Evangelical Lutheran Bethany society, erected small houses for worship. In 1882 the church of the Immaculate Conception (Polish) was erected, at a cost of \$23,600; the church of SS. Peter and Paul (German) on Ninety-first street and Exchange avenue, at a cost of \$10,000, and the German Evangelical Lutheran Zion's church, at a cost of \$3,000.

The first school building, known as the Ray school, was erected in 1853. It was a board shanty, 18x22 and nine feet high, quite in keeping with the character of directors, teachers and students. A similar house was erected a few years later, and with these specimens of scholastic architecture the young and old had to be content until 1876, when the first modern house was erected at a cost of \$28,000. The location on Houston avenue and Ninety-third street pointed out one of two things—the faith of the directors in the destiny of

the district, or their desire to rid themselves of the onus of considering methods for the expenditure of taxes. In 1877 a \$3,000 house was raised on Ewing avenue, south of One Hundred and Third street; in 1878 a \$2,000 house on Sixth avenue, south of Ninety-ninth street; in 1881, the new Ray schoolhouse, at a cost of \$6,000; in 1882, the \$12,000 building on Superior avenue and Eighty-ninth street, and the \$14,000 building on Escanaba avenue and One Hundred and First street.

The Evangelical Association erected a house of worship on Sixth avenue south of Ninety-eighth street (Colehour) in 1875; the German Baptists, on One Hundred and Seventh street, in 1876, and the Swedish Baptists, on Fourth avenue in 1883. In the latter year the builders Roehr & Duggan erected a large brick schoolhouse at Cummings, and thirty dwelling and business houses in that neighborhood. In 1875 the buildings of the Brown Iron & Steel Company, on the river bank, at One Hundred and Ninth street, were commenced, but not until 1884 was the prairie and marsh covered with houses.

Dolton and Riverdale formed one settlement and boasted of two or three commodious farmhouses. Wildwood is another old settlement. At Riverdale a distillery was erected in 1871 and a school building in 1874. Both structures were properly designed. The German Evangelical church, built in 1882, and a few modern dwellings erected subsequently, show some attention to architectural design.

Kensington, or Calumet Station, pointed to John Cooper's boarding-house as its masterpiece of architecture. This was early in the fifties. In 1880 the settlement began to rise from its primitiveness, and to-day boasts of a few well-built business blocks, dwellings and schoolhouses.

Calumet Park, at the junction of the Michigan Central with the South Chicago & Southern railroad; Tolleston, and other new towns, may be classed with the manufacturing suburbs.

The Hammond settlement is as old as Roseland. In 1849 a Dutchman named Holman erected a log shanty near the Indiana line, which gave way some years later to a frame house. Joe Tracket built a house near the intersection of Dolton street and state line early in the fifties, which is still standing. In 1875 M. M. Towle ordered a tract to be platted and named Hammond. A large frame slaughterhouse was erected that year, which overshadowed his large store building of 1872, and a house was completed every day for some months. The fire of December 24, 1883, wiped out twenty-one business houses, and left that manufacturing suburb at liberty to build anew. West Hammond and the new Polish town have been built.

In 1889 Hyde Park was annexed to the city. In Commissioner Dunphy's report for the last five and a half months of that year, is a reference to the marked activity in the building arts within the old township boundaries. He states: "Among the improvements in Hyde Park I notice the Oakland hotel as enlarged, at the corner of Oakwood and Drexel boulevards, also an eight-story, stone-and-brick apartment building, and six-story blocks of stores and flats, both on Cottage Grove and Bowen avenues, large addition to Cornell's seven-story hotel, a large school building at Fiftieth street and Lake avenue, which is a great credit

to its projectors, while there are five others in the old village of Hyde Park which were built during the year. There are many very fine dwellings along Drexel and Grand boulevards, as also on Forty-second and Forty-third streets, also on Lake, Bowen and other avenues and streets. Six new churches have been built during the year, some of which are among the finest inside our present city limits. The Home for Incurables on Fifty-fifth street is one of the best constructed buildings for the purposes for which it was erected in this whole region. There are other charitable institutions just built, all of which reflect much credit on the people of Hyde Park. The South Chicago new steel works, which when completed will cost \$1,000,000 and will furnish employment for one thousand men, speak well for the river district. Then near by, but east of the river, are the new smelting works, which are of gigantic proportions. Several blocks of stores and dwellings have been erected in this vicinity. At and near Pullman and Kensington some notable improvements are to be seen. The old district of Hyde Park, which covered a goodly slice of Cook county, is virtually dotted in nearly its every part with improvements, and the closing year brings this notable territory in for its full share of them for the year ending December 31. Conspicuously is this the case at Park Manor, also in and around South Park, Woodlawn, and extending along down the Illinois Central railroad to Sixty-seventh street, north of which and lying between the Central and the grounds of Jackson park may be seen many fine residences. Indeed, this little nook seems to be a favorite spot for well-planned dwellings. Then on down and along Jeffrey avenue are other fine improvements, many finished and others well under way. At Grand Crossing, Colehour, Dolton and Burnside, many new buildings are to be seen, some fine ones, but mostly of a cheaper class, including many cottages, while there are some for business purposes." This extraordinary activity became more decided in 1890, and still more so in 1891. A better class of buildings in construction, material, finish and style were brought into existence within the last two years.

That section of the city known formerly as the Town of Lake may be said to have been dressed in brick, stone and wood since 1882. For over thirty years prior to that time the cabins of squatters were found in clusters here and there. For a shorter period a few frame houses decorated the prairie, but not until 1869 was any decisive effort at improvement made outside the stock yards district. Since that time Englewood, Normal, Eggleston, Auburn, West Auburn, Englewood on the Hill, Chicago Lawn, Brainerd, South Englewood, Fernwood, and other suburbs have been transformed from the wilderness into a city of detached homes, drives, parkways, lawns and gardens. It may be stated that since the fall of 1882 this striking metamorphosis has been effected. During the last five and a half months of 1889 there were one thousand and fifty-seven buildings erected in the annexed section of that township at a cost of \$2,058,600 or \$1,947.58 each. The great majority of these structures are dwellings, cottages as a rule prevailing. However, there are some costly buildings in the number, and notably so the packinghouse of Nelson Morris at the stock yards, a five-story structure of large dimensions with all modern improvements and appliances. The roundhouse and repair shops of the Lake Shore road at Sixty-third street is a noticeable improvement. There

are several blocks of stores and flats along State street, and many fine dwellings and a few business buildings erected at Englewood and Auburn. But the seven years' work proved only a fair beginning. In 1890 and 1891 many elegant residences, apartment houses and store-and-flat buildings were carried to completion, the more important ones of which are noticed in former chapters. Chicago Lawn, Edgemoor and new suburbs in that section are advancing slowly but surely. South of Eighty-third street, as far as Blue Island, progress is remarkable.

The Normal school and boardinghouse was erected early in the seventies, fronting on Sixty-eighth street. The Methodists erected a church on Forty-fifth and Winter streets in 1877, and the Presbyterians erected one, in 1883, on Forty-third and Winter streets. The Catholics built the large frame house known as the Church of St. Rose of Lima, on Forty-eighth street and Ashland avenue, in 1882-3; St. Augustine's church, on Laflin and Forty-ninth streets, in 1879; St. Elizabeth's, on Dearborn near Fortieth street and St. Gabriel's, on Sherman street south of Forty-fifth street, in 1880. A few years later the people of St. Elizabeth's and St. Gabriel's parishes erected new buildings, the former on Forty-first and State streets and the latter on the original site.

The first Presbyterian building, erected in 1868-9, was a diminutive structure until 1883, when it was remodeled and enlarged. In 1869 the Church of St. Anne was erected, on Fifty-fifth street and Wentworth avenue. The Methodists erected a frame house on Stewart avenue and Sixty-fourth street, in 1875, which was a pretentious structure for the time and place. The Baptist church, on Englewood avenue, was erected in 1873, at a cost of \$7,000, and enlarged in 1882-3 at a cost of \$3,000. The Universalist building was erected in 1880-81. The English Protestant Episcopal society erected a chapel on Sixty-ninth street in 1883. The Catholic church at Auburn was built in 1884. The Reformed Episcopal church house, on Cedar street, was built in 1881-2. The Swedish Lutherans built a house on Butterfield street near Fifty-fifth in 1883; the German Evangelical society built one on Forty-sixth and Dearborn streets, and St. Martin's church was erected on Fifty-ninth street.

The Rock Island railroad depot building, at Fifty-fifth and Clark streets, erected in 1883, was a marvel in its day—a thing of beauty. What is it now? That little gem of architecture in wood and glass, which signalized the coming of the builders into the wild lauds east of Clark street, is scarcely noticed among the residences which have since grown up in that vicinity. The large church, and the larger schoolhouse just west, win all attention on that side.

The Auburn schoolhouse, erected in 1876 at a cost of \$15,000; the brick block or terrace at South Englewood, erected the same year for Richmond & Noble; the depot buildings, at the crossing of the Chicago & Eastern Illinois and Chicago, Rock Island & Pacific railroads, erected in 1882-3; the Dyer & McNeil frame houses on Eighty-third street; the old Ten Mile house, a frame building, on Vincennes avenue; and the large buildings known as the Convent of our Lady and the Church of the Sacred Heart, on Ninety-fifth street, erected in 1875, were the pioneer houses of the southwestern sections of the present city. In

1874-5 the brick schoolhouse at Washington Heights rose above the trees, and southwest, at Morgan Park, a few pretentious brick buildings signaled progress.

Morgan Park was the most ambitious of the southern suburbs after the fire. The Baptist seminary building, erected in 1868-9, at a cost of \$60,000, was a brick structure, 214x48 feet and four stories in height. The Theological Union removed their buildings to the park in 1877. The Female college building, completed in 1875, at a cost of \$30,000, is one of the best attempts at architecture made south of the city in that year. The Military academy dates back to 1873. It is a two-story, attic-and-basement brick house, with mansard roof. All the buildings are much indebted to their beautiful location on the Blue Island ridge, but the enterprise which suggested them, as well as the architects who designed them, merit public approval.

The Convent of Our Lady, on Ninety-fifth street, built in 1875, and the church adjoining, erected in 1874, are important buildings even to-day, and vie with many within the old city limits. The Tracy avenue public schoolhouse was completed in 1875. A few substantial dwellings were erected on that avenue and in the old village of Washington Heights, even before the schoolhouse was projected, and modern cottages began to dot the prairie eastward to South Chicago. The Town of Lake of 1881-5 bears the same relation to the town of 1891 that the old police station on Sixty-third and Wentworth would to the new station on the avenue farther south.

Evanston is the Morgan Park of the northern suburbs. The buildings of the Methodist Episcopal college, known as the Northwestern university, may be said to begin with the university hall, erected in 1869, at a cost of \$110,000. It is a three-story stone structure, with attic and basement, presenting modern architectural features. The Woman's college building is a large brick, three-story, basement-and-attic structure, with mansard roof and clock tower, erected in 1857, on the site of a building burned the year before. The preparatory building is a Colonial low-gabled house, with portico and square tower. Heck hall was erected in 1866-7. White or Milwaukee bricks were used in construction, and a building, five stories in height, was given to Evanston. The building of the Evanston college for ladies, as completed in 1874, shows an adaptation of the Italian style. It is a four-story brick house, with stone facing. The original Garrett Biblical institute building, a three-story frame house, 66x32, was erected in 1854. In 1867 the institute abandoned this building, in favor of the new Heck hall.

In more recent days the first suburban terrace or block of residences was built at Evanston. Since that time residences have multiplied. Stone and brick have been substituted for brick in construction, and modern architectural forms stand where, a few years ago, the carpenter's Gothic or the plain square house represented architecture. The new Village hall, on Davis street and Sherman avenue, compared with the old hall, represents the change fairly. It is 50x150 feet in area, two stories in height, with a high ornamental corner tower and a smaller tower at the north end. Another index to architectural progress is the new rooked-faced stone church of St. Mary's parish, a Gothic structure, erected at a cost of over \$70,000.

The Lake View house, built in 1854, on the lake shore south of Graecland avenue, may be considered the pioneer attempt at architecture in the extreme northern section of the city. Eighteen years later the Town hall was erected at a cost of \$17,000. The hotel above named is a three-story frame house, while the hall of 1872 is a red brick house. Each stands to-day a representative of its building days. The high school building of 1873 is an ornamental one of its class, while the Ravenswood schoolhouse, erected also in 1873, cost \$15,000. The Martha Washington home for female inebriates occupied the old military school in 1882. The church building of Lake View began with the temporary house (erected in 1871 by the Clark street Methodist society), moved to Lake View after the rebuilding of the Clark street house. In 1872 the Congregationalists built an \$8,000 structure; in 1884 the Protestant Episcopalians erected a house for worship at a cost of \$10,000; the Third German Evangelical Reformed Friedens society built a brick house in 1883-4; the Congregationalists built on Seminary avenue and Lill street in 1884-5, and the Catholics erected a large building in 1882, on Wellington street and Southport avenue. The Rose Hill cemetery building, a stone pile in the Norman castellated style, the Catholic Orphan asylum of 1879-80, and the Catholic church and school buildings of 1873, are all creditable houses. Of the various sections of the annexed territory few present finer improvements than Lake View. Lane Park received many improvements in 1887-8, including a church and several pretentious residences. Winnetka and ancient Ouilmette, or Wilmette, are now forging ahead.

West of the old city limits well concerted efforts were made to build up a number of suburban towns, and these efforts were more than partially successful. Long before the south-side subdivision manager grasped the idea of setting out trees, grading and macadamizing streets, building sidewalks and erecting houses, the far westerners of Oak Park had it in operation.

In 1853 the Skinner hotel overshadowed the older cabins of Oak Park and pointed to a brighter building era. In 1873 the Methodists erected a frame building on Forest avenue and Lake street, which they veneered with brick and ornamented with two towers and spires. The cost of this pretty building was \$24,000. The Congregationalists followed this example in 1874, and built a \$20,000 stone structure. The pioneer of architectural churches was that of the Unity society, a frame house on a stone basement, completed in 1872 at a cost of over \$12,000. The society known as Grace Protestant Episcopal church erected a brick house in Gothic form during the years 1882-3. The Scoville institute building of 1885, the water-works building of 1878 and the school buildings of this suburb show attention to architectural detail.

Austin was one of the first suburban settlements to show an appreciation of art in building. Many of the residences of twenty years ago are decidedly excellent structures. In the summer of 1872 the Methodist society commenced the erection of a stone church, the rock being supplied by Denis Burns, of Batavia, and shortly after, the Baptist society completed a frame house. St. Paul's English Protestant Episcopal society had their frame house torn down by a tornado in June, 1881. It was almost completed. In November of

that year their second attempt at building was destroyed by fire, and not until the close of 1883 was their third house completed. In 1881 the Presbyterians erected a large frame building. The North schoolhouse, erected in 1879 at a cost of \$20,000, and the Queen Anne dwellings of later days contribute to give life to the broad, shaded avenues.

The Union church at Brighton Park, erected in 1874 at a cost of \$5,000, was a frame house designed to last so long as the union between the Baptists and Methodists of that district would last. The fragile structure outlived that union. After reorganization a new house was erected on Green and Thirty-eighth streets at a cost of about \$2,000. In 1880 the Baptists completed a frame house for worship. St. Agnes' Catholic school building was completed in 1884, after an expenditure of about \$25,000. The new church of that parish is a large building with some architectural pretensions.

A peculiar church was erected at Clyde in 1874 on the style which obtained at Riverside, namely, the Swiss chalet, as unsuitable to a prairie country and to this latitude as style may be made.

Riverside was conceived in 1868, when Emery E. Childs and L. W. Murray bought 1,600 acres from David Gage and organized the Riverside Improvement Company. This company gave Olmstead, Vaux & Co., the landscape gardeners, *carte blanche* to make the finest subdivision imaginable. Gage arranged to release the property lot by lot. During the first year \$250,000 was expended in roads, sewers and general improvements. In order to allow the company to raise money, Gage was induced to release a part of the land. On the part so released the company borrowed the necessary funds. In 1869 the company had sold \$850,000 worth of lots and had put this sum into improvements. The improvements by this time amounted to \$1,000,000, including water and gas works. After the fire of 1871 the company found itself in financial straits, and again induced Gage to make further releases. The company then managed to tide over until 1872, when it transferred all its assets to the Chicago & Great Western Railway & Land Company. Bonds were issued to the extent of \$1,000,000. The Peck estate purchased \$100,000 worth of preferred bonds. With the remaining \$900,000 the most of the old indebtedness was paid off. The panic of 1873 caused the collapse of both companies and brought on a long series of judgment suits by creditors for about \$700,000. The whole idea was Utopian. The Alpine idea of architecture prevailed and the Swiss system of construction was adopted.

The Tilton schoolhouse was the first important building in the Central park neighborhood, other than the railroad company's buildings of 1873. The little church buildings of St. Phillip's Catholic parish and of St. Barnabas' Protestant Episcopal mission were erected in 1878 and 1882, respectively. Within the last decade the modernizer has been earnestly at work in this district, ornamenting the prairie with homes, the idea of which was scarcely entertained twelve years ago. In 1874 the Hoffman avenue schoolhouse was erected at a cost of \$20,000, it being the pioneer of the large educational houses in that quarter of the city. The church buildings are frame structures, the greater number small and unpretentious, wanting in every architectural feature. In 1838 Abram Gale had a house, 18x34 feet, erected on the

ridge known as Galewood, for \$75. That style obtained in Jefferson up to 1870, and does to-day to some extent; but there are several well-built frame houses and many brick residences and business blocks to be found there. Since 1887 that portion of Milwaukee avenue belonging to Jefferson township, has given substantial marks of progress. The Washburn & Moen Manufacturing Company's warehouse at Cragin, the first fireproof structure in the township, and, perhaps, the largest warehouse erected in the west up to 1884, is a marvelous piece of warehouse engineering.

Montrose, Morton Park, Avondale, Irving Park, Maplewood and a dozen of other suburbs date back to the seventies for their improvements; but modern times have contributed largely to cover up those prairie stretches.

In former pages the statistics of building operations from 1864-76, are given. Here let the tell-tale figures of 1877-91 find a place:

Year.	No. of Houses.	Frontage feet.	Cost.	Miles.
1877.....	1,389	35,033	\$ 6,922,649	6.6
1878.....	1,019	31,118	6,605,200	5.9
1879.....	1,093	33,361	6,139,580	6.3
1880.....	1,368	44,964	8,206,550	8.5
1881.....	1,738	56,627	13,467,000	10.7
1882.....	3,113	73,161	15,842,800	13.8
1883.....	4,086	85,588	17,500,000	16.2
1884.....	4,169	98,782	20,689,600	18.6
1885.....	4,638	108,850	19,624,100	20.6
1886.....	4,664	112,302	21,324,400	21.2
1887.....	4,833	115,506	19,778,100	21.8
1888.....	4,958	116,419	20,360,800	22.0
1889.....	7,590	181,126	31,516,000	34.3
1890.....	11,608	266,284	47,322,100	50.41
Total.....	56,266	1,359,121	\$255,298,879	256.91

The buildings erected during 1890 cover a frontage of fifty and one-half miles. In the south division 1,120 buildings were erected, have a frontage of 29,597 feet, at a cost of \$15,400,800; in the north division 502 buildings, with a frontage of 14,055 feet, costing \$3,681,200; in the west division 3,994, with a frontage of 91,336 feet, costing \$13,687,600. Hyde Park shows up with 2,052, with a frontage of 44,481 feet, costing \$6,624,300. In Lake 2,889 were erected, with a frontage of 63,297 feet, costing \$5,578,100. Lake View added 1,051, with a frontage of 23,518 feet, costing \$2,350,100.

From October 10, 1871 to December 31, 1876, there was a sum of about \$49,239,000 expended on buildings, or a total of \$304,537,879 from October 10, 1871 to December 31, 1890. The totals do not include the large sums of money expended in sheds and additions or in moving old buildings and restoring them, nor does it touch the millions expended in the recently annexed territory, south, west and north of the old city limits, prior to 1890. Yet this can only be considered as a beginning. What will 1892 and 1893 see accomplished? A great deal—a frontage of gigantic proportion and a floor-area almost equal to that of Chicago at the close of 1888.

The figures from the records of the departments of building in twenty-seven of the chief cities of the United States for the year 1889 have been compiled in a table which presents some surprising contrasts. Philadelphia built more new houses in 1889 than any other American city. The number is 11,965 against 6,722 in New York; but while the cost of Philadelphia's 11,965 houses was \$26,000,000, the investment in New York's 6,722 new buildings was \$75,912,816, or nearly three times as much. In other words, while the new structures in New York cost on an average \$11,293 each, those in Philadelphia cost only \$2,172.

	No. Houses.	Cost.	Average.
Chicago.....	7,590	\$31,516,000	\$4,552
Brooklyn.....	4,500	25,679,405	5,706
Boston.....	4,431	32,400,000	7,312
Minneapolis.....	4,355	8,737,281	2,006
Washington.....	4,048	6,165,715	1,523
Cleveland.....	4,007	4,401,854	1,098

Boston built only about one hundred and fifty more houses than Minneapolis, but she expended \$32,400,000 to Minneapolis' \$8,737,281. A mushroom growth in Cleveland is indicated by the amazing disproportion between the number of structures and the total cost. Following the comparison a little farther, there are six cities where the year's total of new houses ranges from two to four thousand:

	No. Houses.	Cost.	Average.
St. Paul.....	3,756	\$ 7,939,493	\$2,113
St. Louis.....	3,544	9,765,700	2,755
Pittsburg.....	3,241	8,000,000	2,468
Denver.....	2,741	10,807,377	3,942
Omaha.....	2,498	4,663,735	1,803
Cincinnati.....	2,104	4,143,214	1,969

Among the towns where less than two thousand new houses were built are three that come within or almost within the metropolitan circle; and they show a remarkable closeness in their averages:

	No. Houses.	Cost.	Average.
Newark.....	1,541	\$5,000,000	\$3,244
Jersey City.....	930	2,930,857	3,151
New Haven.....	628	2,066,700	3,290

During the first six months of 1891 applications were made for permits to build 6,068 buildings, to cover a frontage of 149,177 feet, at an estimated cost of \$22,877,000. During the corresponding period of 1890 permits were issued for 5,840 buildings, to cover a frontage of 132,461 feet, and to cost \$21,445,000. The gain is in two hundred and twenty-eight buildings, at an estimated cost of \$1,632,000. To show the comparative activity in building of the different sections of the city, the following analysis of the building permit list for the first six months of 1891 is here given.

	No.	Feet.	Cost.
West side.....	1,966	52,573	\$6,778,600
South side.....	550	16,552	6,879,400
North side.....	285	8,324	1,820,200
Hyde Park.....	1,034	24,214	3,485,800
Lake.....	1,569	32,532	2,683,600
Lake View.....	664	14,982	1,230,100

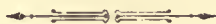
During the half year ending with June 30 permits were issued for the improvement of twenty-eight miles of frontage. These buildings would line one side of a street solidly for 25.09 miles. The total valuation of the buildings for which permits were secured exceeds by a few million dollars the totals of each year from 1884 to 1888, both inclusive. It is also equal to more than the combined totals of the three years 1878, 1879 and 1880.

On the date given the Lunt-Waite block on Washington street was a thing of the past, even its foundations were removed to make way for the Cook County Abstract & Trust Co.'s building. The old Unity block, the old Ashland block, and hundreds of smaller houses throughout the city, were taken down or removed to make way for modern structures. There are four building enterprises opposite the single block bounded by Dearborn, Washington, Clark and Randolph streets, all under way. Three of them are to be sixteen-story structures, and the fourth is to be fifteen stories in height. The permit for the building of the Ashland block, as granted, gives the estimated cost of the structure at \$600,000. The Cook County Abstract & Trust Co.'s building will cost at least as much. The combined hotel and theater projected by the German Opera House Association will cost \$500,000, and the Unity building will represent an expenditure of between \$600,000 and \$800,000. Before the close of July these four buildings, which will cost almost \$2,500,000, were under way, while just east of State street the building to replace the Vienna bakery building was started. Rapid progress is being made in all of the great building enterprises clustered around the Postoffice. The new Monadnock office building, the hotel opposite, the Fair building, and the Woman's Temple, are nearing completion or are being pushed forward rapidly. There has never been a time in the history of Chicago when so many great building operations were in progress at the same time.

It may be asked why should Chicago be able to enter the lists with the old cities of the continent? Why should Chicago aim to take the lead of all modern cities in population and commerce and art? Because here the pioneers saw the true gateway to the great grain fields, the great stock ranges and the great mines, the wealth of over half a million square miles. Because here is the natural emporium for a country, the richness of which is yet but little known, while its prairies, valleys and hills are scarcely settled.

In such a city, one of immense possibilities, enterprise congregates and it is a question now whether the limitations of commercial knowledge in this country, as in others, are not responsible for holding Chicago in check. The nations are represented here, but only yesterday did the dwellers stop to think of what is unaccomplished. Enterprise slept, and a city which has all the qualities to be first of all great centers in the world is now, at the beginning of the last decade of the nineteenth century, only the second in her own country. Her people have now awakened from that sleep, and, looking round, they see the day-star of her destiny. They labor so they may walk in its light.

CHAPTER X.



ARCHITECTS' AND BUILDERS' ASSOCIATIONS.

MANY of the designers and builders of the old city find mention in the history of their works. The architects and contractors of later days are named in this chapter, thus bringing close together the buildings and the leading persons of the drama of building. What has been accomplished by the architects' associations of the modern city in the interests of true building? They have banished the stone veneerer from the leading business and residence streets, a feat which, only a decade ago, seemed impossible. The limestone slabs of other days, beginning with the Crosby opera house, had to give way to more enduring material, such as the Philadelphia pressed brick, and, from the foundation to the apex, buildings began to show the new era of care and taste in construction. Within, they have changed the forms of olden ideas in the arrangement of rooms and done away, for ever, with the age of interior painted woodwork. All this and much more they accomplished for the people. To the profession the association has brought immense benefits, for though its members have been instructed in discipline, their individual ideas have been systematized, as it were, and a spirit of honor and emulation inculcated, all of which, necessarily, raise up a standard that the young men must attain and their seniors defend. Beginning associated life in November, 1884, the architects of Illinois have extended their influence; and as reforms in American laws and practice spread out from the law circles of Mississippi in the past, reforms in architectural life and style spread out from Illinois in the present; for the influences of the architectural thought of this state, directed by association, now permeate professional thought throughout the English-speaking countries, and receive some attention even from the great schools of France and Italy. Chicago has set about the abolition of the grotesque and monstrous in architecture under the genial sway of associated thought, so that all those strangely peculiar forms, masquerading under several names from 1882 to 1885, are fast giving place to nobler forms, are making way for a practical, useful, coherent style, which will transform the bizarre town of the past into a city which will stand for ages, a monument to study and sound sense.

In the chapters devoted to descriptions of the buildings of this city the names of many of the first resident architects and draughtsmen appear, with, perhaps, the exception of W. H. Bushnell, who was a draughtsman in Ogden & Jones' office in 1843. He was also the

story-writer of that period, and contributed sundry short tales to the press. He died at Washington, D. C., in March, 1890.

The architects of 1859, particularly those whose names have been carried down in the list of 1869, were the designers of old Chicago, being at once the architects, draughtsmen and superintendents of the time. They were as follows: W. H. Bayless, 25 Larnon building; W. W. Boyington, 82 South Dearborn street; Ed. Burling, 46 South La Salle street; W. H. Carter, 46 Van Buren street; Carter & Baner, 51 South La Salle street; John De Clercq, 39 Hubbard street; G. W. Gray, 101 South Dearborn street; George M. Hawkes, Tremont Exchange building; Francis Kahle, 1 South Clark street; Otto H. Matz, 162 Lake street; L. N. Murphy, Tremont building; Peter A. Nicholson, 110 South Dearborn street; J. B. Picard; G. P. Randall, 20 Portland block; William Thomas, 101 South Dearborn street; John M. Van Osdel, 8 Masonic Temple; T. V. Wadskier, 110 South Dearborn street; O. L. Wheelock, 77 South Dearborn street, and Peter B. Wight, southwest corner of State and Randolph streets.

The architects of 1869 were Dankmar Adler,* W. N. Avenel, F. & E. Baumann* (also in 1872-9), Baumann & Buschik, W. W. Boyington* (also in 1872-9), Thomas C. Boyington, Homer H. Boyington, Carter & William Drake* (also in 1872 with Wright), Cochrane* & Piquenard (with Miller in 1872-9), A. Dezendorf, George O. Garnsey* (also in 1872-9), C. H. Gottig* (also in 1872), Kenney & Adler* (also in 1872), Otto H. Matz* (also in 1872-9), Noequet & J. L. Merriam* (1879), Nichols & Niehell, O. H. Placey* (also in 1872-9), G. P. Randall* (also in 1872-9), Rose & Chapman* (also in 1872-9), William Thomas & Son* (also in 1872-9), J. M. Van Osdel* (also in 1872-9), Van Pelt & Jennison, T. V. Wadskier* (also in 1872-9), O. L. Wheelock* (Wheelock & Clay in 1879), John K. Winchell* (also in 1872), Fred. W. Wolf* (also in 1872-9). Horace W. S. Cleveland was the only landscape architect here in 1869-72-79.

The names of the architects of 1871-2 are as follows: J. W. Aekerman,† C. H. Alexander,† W. N. Arend,† Armstrong & Egan, J. Anstin† & Le Lardoux, Barton & Treadwell, A. Baner† & Loebnitz, J. H. Bigelow, William Blanke,† R. C. Blum, G. Bolten† & J. Zittel,† Burling,† Adler† & Co., Felix Buschik, Cleveland & French, John C. Cochrane, Copeland & Weary, J. B. & W. C. Corlies,† Cuddell & Blumenthal,† De Forrest & Fisher, John Dillenburg,† L. B. Dixon† & Hamilton, George H. Edbrooke,† C. W. Edson, Faulkner & Clark, William A. Furber,† Henry L. Gay,† G. M. Hawkes,† C. O. Hansen,† Hodgson & Brown, J. C. Hornblower, Horsey & Sheard, Henry S. Jaffray,† E. S. Jennison,† W. L. B. Jenney,† Theodore Karls,† A. J. Kenney, W. O. Kleinsmith, C. W. Laing,† L. G. Laurean, M. J. MeBirg, Henry Meissner, Merriam & Street, John R. Neff, C. M. Palmer (with Spinning in 1879), Payne & Gray, C. W. Pettie, W. H. Phelps, W. R. Preston, S. M. Randolph,† H. Rehwolt,† Adam L. Robb, John W. Roberts, Rodger & Lyon, Rufus Rose, Roy & Clifford, Robert Schmid, Henry Schroeder, S. V. Shipman & Co.,† O. G. Smith, Smith & Boynton, F. S. Stewart, Tilley & Loughurst, Treat & Foltz,† John Tully† & Osborn, H. Von Langen, S. C. Walshe, J. R. Willett,† York & Ross, G. Zucker.†

*Were here in 1859 also.

†Were here in 1879 also.

They formed a circle of citizens devoted to architecture, who, in the rush and hurry of uplifting a city from ruin, stood between art and barbarism and gave to Chicago many of the beautiful buildings which the age of steel and pressed brick found here.

The architects of 1879 who were not here at the beginning of 1872 are named in the following list, while those of 1872, who were here in 1879, are marked thus * in the list of 1872: John Addison, Minard L. Beers, A. H. Brodman, Burling & Whitehouse, Burnham & Root, W. L. Carroll, F. L. Charnley, Oscar Cobb, John C. Cochrane, Dewitt Davis, A. M. Colton, J. J. Dennis, William Drake, W. J. Edbrooke, Egan & Hill, S. Einersen, Julius Ender, John J. Flanders, George Frommann, Furst & Rudolph, Jesse M. Holden, H. M. Hansen, H. P. Harned, C. C. Hotchkiss, Paul Huber, Wallace Hume, J. S. Johnson, Alex. Kirkland, Henry Kley, J. Koenigsberg, J. H. Littlefield, C. E. Lohman, William Longhurst, H. Lutter, Jr., Alban B. Lyneh, D. W. Millard, C. C. Miller, J. T. Moulton & Son, O. J. Pierce, F. R. Schoek, Henry Sierks, Alfred Smith, Philip Spitz, E. Stende, C. L. Stiles, W. Strippleman, W. C. A. Thielepape, Gregory Vigeant, F. H. Walseher, P. B. Wight, W. H. Wilcox, I. C. Zarbell.

They came in time to experiment on the lines of the Queen Anne and other quaint forms of house building and immediately left the impress of their advent on the prairie north of North avenue, south of Thirty-ninth street and west of Ashland avenue; for in 1880-82 their adaptations of old English styles gave to the territory described great numbers of those wild-gabled homes, which, to the surprise of the owners at least, are still on their foundations with roofs and gables intact.

The American Institute of Architects, now national in its influence and membership, was a local organization of architects up to 1869, when the Chicago and Philadelphia chapters were admitted. On December 7, 1836, when scarce twenty experienced architects could be found on the North American continent outside the cities of Mexico, Quebec and Montreal, a few members of the profession assembled at New York with the object of forming an association. In May, 1837, the adjourned meeting was held at Philadelphia, under call of March 23, 1837, signed by T. U. Walter, as secretary of the first meeting. William Strickland, T. U. Walter, A. J. Davis, Mr. Rogers, Mr. Vreamp and Mr. Reichardt were the only architects present, but William Kelly, John D. Jones, and the student, N. Le Brun, were admitted at once, and may be classed with the charter members of the first American institution of architects.

The organization lived one short summer, and not until 1857, when the American Institute of Architecture was established, did any organization appear to take its place. Richard Upjohn, elected president in 1857, held that position until 1876, when Thomas U. Walter was elected. He served until his death, in 1887, when R. M. Hunt was elected. J. C. Wells, the first treasurer, was succeeded in 1861 by R. G. Hatfield and he by O. P. Hatfield, in 1880, who served until 1890, when S. A. Treat was elected. R. M. Hunt was the first secretary. In 1860 and 1861 the office was filled by Henry Van Brunt and J. W. Riteh. During the war Charles D. Gambrill was acting secretary and E. T. Littell attended to the

duties of that office in 1865-7. H. H. Richardson was corresponding secretary for several years, but in 1869 Henry A. Simms was appointed secretary of foreign correspondence.

In 1867 the system of consolidation of architectural societies was adopted and the New York chapter was admitted. F. C. Withers was elected secretary and served until the beginning of 1869, when Russell Sturgis was elected. P. B. Wight was chosen secretary and served two years; Carl Pfeiffer, two years; A. J. Bloor, four years; C. F. McKim, one year; H. M. Congdon, two years; A. J. Bloor, two and one-half years; George C. Mason, Jr., three and one-half years; A. J. Bloor, three years. In 1887 W. A. Potter was elected secretary; in 1888, A. J. Bloor; in 1889 and 1890, John W. Root. C. D. Gambrell, elected in 1878, declined, when W. R. Ware was elected. He also declined, leaving Mr. Bloor to carry on the business of the office. As has been stated, the system of chapter organization was introduced and the New York chapter admitted to the institute March 19, 1867; Philadelphia, November 14, 1869; Chicago, December 13, 1869; Cincinnati, February 14, 1870; Boston, December 6, 1870; Baltimore, January 13, 1871; Albany, May 28, 1873; Rhode Island, November 10, 1875; San Francisco, November 4, 1881; St. Louis, April 16, 1884; Indianapolis, July 2, 1884, and Washington, September 21, 1887. In the last given year western architects took part in the institute proceedings and in 1889 the western men merged their associations into the national association and the old institute took on a new life.

The twenty-first annual convention of the American Institute of Architects was held in the Art institute at Chicago October 19 to 21, 1887. Among the Chicago members present were D. H. Burnham, H. W. Hill, A. F. Pashley, S. S. Beman, S. A. Treat, N. S. Patton, J. W. Root, L. D. Cleveland, Henry Lord Gay, Louis H. Sullivan, M. E. Bell, William W. Clay, S. V. Shipman, William Holabird, J. L. Silsbee, J. J. Flanders, W. L. B. Jenney, W. A. Otis, D. Adler, John Addison, Aug. Fiedler, A. Smith, James R. Willett, P. B. Wight and F. L. Charnley. A paper was read by D. Adler entitled "Paramount requirements of large theaters;" one by M. E. Bell, "The national building question;" one by W. W. Boyington, "Differences between the methods of architectural practice prevalent now and fifty years ago;" one by Charles H. Ham, "Manual training as applied to the building arts;" one by D. H. Burnham, "Suggestions for harmonizing architectural societies in the United States;" one by L. H. Sullivan, "Opera houses," and one by Mr. Fredericks, "The diningroom." The officers elected were R. M. Hunt, New York, president; W. A. Potter, New York, secretary, and O. P. Hatfield, New York, treasurer. John W. Root was chosen a director, and S. S. Beman, a member of the committee on publications.

The twenty-second annual meeting of the American institute was held at Buffalo, N. Y., October 18 and 19, 1888. The report on the consolidation of architectural associations was presented and led to a lengthy debate. President Hunt pointed out that the American institute required thirty-one years to gather two hundred members under its standard, while the Western institute enlisted a greater number within forty-eight months. This point was made to sustain the motion admitting the Western association, and with other similar striking points won the friendship of the convention for the measure. R. M. Hunt was chosen president; A.

J. Bloor, secretary; R. W. Gibson, secretary of foreign correspondence; O. P. Hatfield, treasurer; E. T. Littell, N. Le Brnn, G. A. Frederick and W. W. Clay, trustees. The proposition to consolidate all architectural societies, leaving to each local or stato organization a chapter character was entertained favorably, and the consideration of all plans for consolidation left over for the next annual convention—meantime a letter ballot to be taken on the whole question. The twenty-third convention elected the late John W. Root, secretary, and Sannel A. Treat, treasurer.

The twenty-fourth annual convention of the American institute, and the first since consolidation with the Western association, was held at Washington, D. C., in October, 1890. President Hunt not being present, W. W. Carlin took the chair. Among the Illinois members in attendance were D. Adler, F. Baumann, Julien Barnes (Joliet), W. W. Clay, Henry L. Gay, S. M. Randolph, John W. Root, S. V. Shipman and S. A. Treat. President Hunt's address was read by E. H. Kendall, of New York City; the reports of committees were presented and the relations of chapters to the institute considered. The officers elected were: R. M. Hunt, president; W. W. Carlin and J. W. McLaughlin, vice presidents; John W. Root, secretary; S. A. Treat, treasurer; W. M. Poindexter, Washington, D. C.; George C. Mason, Jr., Philadelphia, Penn.; G. B. Ferry, Milwaukee, Wis.; Levi T. Schofield, Cleveland, Ohio; C. J. Clark, Louisville, Ky.; E. F. Fassett, Kansas City, Mo.; Alfred Stone, Providence, R. I., and M. J. Dimmock, Richmond, Va., directors. Papers were read on "The science of æsthetics," by Henry R. Marshall; "Foundations for Kansas City muncipal buildings," by S. E. Chamberlain; "Thoughts on architecture," by Frederick Baumann; "The law of the development of Gothic architecture," from posthumous papers by H. B. Wallace.

A. J. Bloor, the historian of the institute, states that the "papers of members of the institute, published in the proceedings of the past, include essays on iron and fireproof construction, by the late R. G. Hatfield, P. B. Wight, G. B. Post, A. J. Bloor, N. H. Hutton, F. Schumann and the late D. Lienau; on building soils, foundations, heavy buildings, masonry, concretes and mortars, terra cotta, special minor instructions, etc., by the late J. T. Sturgis, N. H. Hutton, the late A. C. Nash, F. Baumann, E. T. Potter, W. L. B. Jenney and R. B. Gibson; and on colonial, American or governmental architecture, by the late President Upjohn, J. L. Smithmeyer, P. B. Wight, President Hunt, A. Cluss, R. S. Peabody, C. A. Cummings, W. A. Potter, H. M. Congdon, J. Moser, M. F. Bell and George C. Mason, Jr. Acoustics and sanitary subjects, including the questions of heating, ventilating, sewerage and plunbing, have been treated by A. Cluss, the late H. R. Searle, the late C. Pfeiffer, Col. G. E. Waring, T. M. Clark, L. W. Weeds, the late R. Briggs, — Tudor and Glenn Brown. C. C. Haight, J. H. Hopkins, R. S. Peabody and C. A. Cnmings have furnished papers on church architecture. The subjects of apartment and tenement houses have prodneed papers respectively from the late J. R. Niernsee and A. J. Bloor. D. Adler (architect, with his partner, L. H. Sullivan, of the Auditorium in Chicago) has a paper on the theaters; J. C. Cady (architect of the Metropolitan opera houso in New York) one on opera houses; J. L. Smithmeyer (architect, with

his partner, Mr. Pelz, of the Congressional Library) one on library buildings; G. A. Frederiek one on diningrooms, and J. H. McNamara, one on domes and towers. Specialists in the æsthetics of architecture have furnished to the columns of the proceedings the following papers: 'Technical proportion,' by D. T. Atwood; 'A new style,' by A. F. Oakey; 'Painting and sculpture,' by Prof. C. E. Norton; 'Wall and window decoration, etc.,' by A. J. Bloor; and 'The harmony between colors and music,' by E. G. Lind. Legal, ethical, protective and educational questions, involved in architectural study and practice, have elicited papers from the late R. G. Hatfield, T. M. Clark, Professor Watson, the late A. C. Nash, J. A. Fox, C. A. Ham, J. W. Wilson, G. A. Frederiek and J. W. Yost; while historical and archæological papers have been supplied by T. J. Clarke and W. W. Boyington. The subject of building laws, applicable to this country, has been treated by E. Anderson, A. Stone, T. M. Clark and G. A. Frederiek, and has been vigorously treated by a number of the chapters in their relations with their several governments, to the great benefit of both the public and the profession. 'Architectural and other art societies, etc.,' and 'Landscape treatment, etc.,' are by A. J. Bloor; and 'Suggestions toward the best and speediest methods for harmonizing and utilizing all the architectural societies in the United States,' was furnished by D. H. Burnham, in response to a circular letter of my own to the members of the institute, furnishing that title and requesting answers to the questions implied in it. One of the latest proceedings includes a sketch of the professional life of one of the founders of the institute, but still active in practice, James Renwick; and among the proceedings issued are memoirs of the late President Upjohn, and one by George C. Mason, Jr., of the late President Walter.

"It is patent to all unprejudiced observers of the growth of fine architecture and of the professional and social status of its practitioners in this country during the last thirty years, that by far the most potent factor thereto has been the institute, and its influence on public-spirited laymen of artistic cultivation or tastes has already reacted generously for the benefit of the profession. Unless it be the *prix de Rome* of the *Ecole des beaux arts*, there is not, so far as my knowledge goes, either in this country or in Europe, any prize more tempting to the student of architecture, and more provocative of the putting forth of his best powers, than the 'Rotch traveling scholarship,' administered by the Boston chapter, and founded by the heirs of Benjamin R. Rotch, the father of a Boston practitioner and fellow of the institute, Arthur Rotch, in pursuance of his expressed munificent intentions. Its income of \$2,000 supports two students for two years in their travels in Europe. In this connection must be noted the recent very handsome gift for a similar object, to the architectural department of Columbia college of \$20,000 by C. F. McKim, fellow of the institute and member of its New York chapter. Still more recently S. B. Avery and his wife have, in the name of their son, O. P. Avery, a member of the institute and its New York chapter, given to Columbia the latter's fine collection of architectural books, valued at many thousand dollars, with a fund, payable in two installments, of \$30,000 additional for its maintenance and the purchase of new books. F. A. Schermerhorn, a trustee of the college, has for a number of years been

a munificent donor to its architectural department, his latest gift providing for an income of \$13,000 each alternate year. The Metropolitan Museum of Art of New York is now being enriched, under the commissionership of three members of the local chapter, with an architectural department, the fruits of the influence of N. and P. L. Le Brun, fellows of the institute, on a generous lover of architecture, Levi Howe Willard, who bequeathed some \$80,000 for that object, with strict instructions as to the fulfillment of his wishes in the matter and manner of selection. The Philadelphia chapter, too, has recently, through the influence of T. P. Chandler, Jr., been made the administrators of a fund of about \$20,000 to be used, after a period for the accruing of interest, in behalf of the art and the profession.

“It may be noted, too, that the best known of the architectural departments attached to the universities, or other institutions of the higher culture, have been inaugurated, and for many years conducted by members of the American Institute of Architects, *e. g.*, those of the Massachusetts Institute of Technology and Columbia college by W. R. Ware, of Cornell by C. Babeok, and of the Illinois university by N. C. Rieker. Recently, too, a similar department has been added to the curriculum of the University of Pennsylvania, under the auspices of the Philadelphia chapter of the institute. H. T. Auehmuty, who has done so much with the training schools he established years ago at his own expense for the proper education (denied them by the internal administration of so many of the building trades) of American artisans connected with the building arts, was, it may also be noted, the pupil and afterward the sometime partner of the Nestor of the profession, James Renwick, architect of the Catholic cathedral in New York.”

The Chicago Chapter of the American Institute of Architects was organized in 1869. An annual meeting was held at 21 East Van Buren street in 1873. W. W. Boyington presided. The officers elected were W. W. Boyington, president (re-elected); J. C. Cochrane, vice president; C. C. Miller, secretary; P. B. Wight, treasurer; J. R. Willett and W. L. B. Jenney, members of executive committee, with W. H. Drake, C. P. Thomas, S. E. Loring and J. C. Cochrane, members of committee on admissions. In the address the president referred to the fire of 1871, and drew the attention of architects to the work required of them under the improved conditions of the new Chicago. This address was amply rewarded by attention to the principles enunciated. The work of the chapter for the ensuing decade may be said to have been limited to the election of officers, for from all printed records at hand the names of the following officials only could be obtained. In 1874 W. W. Boyington, president; C. C. Miller, secretary; J. R. Willett, treasurer. 1876-7, P. B. Wight, president; H. L. Gay, secretary; J. R. Willett, treasurer. 1877-8, P. B. Wight, president; H. L. Gay, secretary; J. R. Willett, treasurer. 1878-9, A. Bauer, president; S. A. Treat, secretary; J. R. Willett, treasurer. 1880-5, A. Bauer, president; S. A. Treat, secretary; J. R. Willett, treasurer. 1885-6, A. Bauer, president; A. G. Quaekenboss, secretary and treasurer.

In October, 1886, an election of officers resulted in the choice of L. D. Cleveland for president; W. L. B. Jenney, vice president; M. L. Beers, treasurer, and A. F. Pashley, secretary. At this time the secretary pointed out the increase in membership and other evidences

of revived interest in the association, after a long term of inactivity. This society was influential in 1873-4, and to it and the Association of Underwriters the conception and adoption of Chicago's building laws of that period are credited. December, 1887, S. V. Shipman was elected president; John Addison, vice president; W. A. Otis, secretary, and William W. Clay, treasurer. A paper by Frederick Baumann, on the sanitary construction of residences, won attention in the fall of 1887, and suggested many improvements in sanitary engineering. In December, 1888, W. L. B. Jenney, W. W. Clay, W. A. Otis and S. S. Beman were elected president, vice president, secretary and treasurer, respectively.

On December 12, 1889, the Chicago Chapter of the American Institute of Architects and the Illinois State Association of Architects resolved upon permanent union, in view of the action consolidating the Western and Illinois associations with the American institute. On January 20, 1890, a joint meeting was held at Chicago, when the resolution of the committees of both bodies, passed December 12, 1889, was adopted, and the Illinois Chapter of the American Institute of Architects was brought into existence, the Illinois State association merging into the Chicago chapter and the latter into the Illinois Chapter of the American Institute of Architects. The new organization ordered that articles of incorporation be filed, and that the assembly rooms of the permanent exhibit, as tendered by Mr. Gay, be used as headquarters until permanent quarters might be rented.

In May, 1884, the necessity of organizing a western architects' association was well set forth in an editorial in the *Inland Architect*. In June a circular was addressed to architects, by E. H. Taylor, secretary of the Des Moines, Iowa, association, drawing further attention to the subject. This letter led to the call for the meeting of November following, and under this call a convention of architects was held at Chicago, November 12, 1884, to organize an association. The convention was called to order by R. C. McLean, who nominated D. H. Burnham for temporary president. S. M. Randolph nominated Henry I. Cobb for secretary, and both were chosen unanimously. A committee on constitution, C. K. Ramsay, of St. Louis, John W. Root and W. L. B. Jenney, of Chicago, and also one on by-laws, Messrs. Ramsay and Jenney, above named, with I. Hodgson, Henry I. Cobb and George Wirth, were appointed. The reports were received on the 13th, and adopted in the amended form. C. E. Illsley, of St. Louis, was elected president; Henry L. Gay, secretary; D. Adler, treasurer; D. H. Burnham, S. A. Treat, Louis H. Sullivan, Sidney Smith and W. L. Black, directors. A vote of thanks to Secretary Gay for the use of the Permanent Exhibit hall was adopted.

The second meeting of this association, its first convention, was held in St. Louis, Mo., in November, 1885. President C. E. Illsley, of St. Louis, presided; Treasurer D. Adler and Chairman of Directors D. H. Burnham, both of Chicago, presented their reports; Mrs. Louise Bethune, of Buffalo, N. Y., was admitted to membership; a system for conducting competitions was adopted; the annual dues were increased from \$2 to \$5; W. L. B. Jenney was elected first secretary for foreign correspondence; the committee on statutory laws was re-elected; a committee on the organization of state societies was created; W. L. B. Jenney was appointed one of the delegates to the convention of the American Institute of Architects, and

officers for 1886 were chosen. D. Adler was elected president; John W. Root, secretary; S. A. Treat, treasurer, and Messrs. Jenney, Illsley, Taylor, S. Smith and Millard, directors. The list of charter members was confirmed at this meeting and ordered to be published. This list, embracing two hundred and fifty-three names, contains the names of eighty-seven Chicago architects, as shown in the following roll:

Addison, John.	Flanders, J. J.	Randolph, S. M.
Adler, D.	Foltz, F.	Rehwoldt, H.
Aschlager, F.	Frost, C. S.	Roche, M.
Baumann, E.	Furst, C. J.	Root, John W.
Baumann, F.	Gay, Henry Lord	Ruehl, P. W.
Beers, M. L.	Halberg, L. G.	Rudolph, C.
Beman, S. S.	Hansen, C. O.	Schaub, L. J.
Berlin, R. C.	Hill, H. W.	Schock, F. R.
Blumenthal, A.	Holabird, William.	Schroeder, R. E.
Boyington, W. W.	Huber, J. H.	Shipman, S. V.
Burling, E.	Jaffray, H. S.	Sierks, H.
Burnham, D. H.	Jenney, W. L. B.	Silsbee, J. L.
Burnham, F. P.	Jennison, E. S.	Smith, A.
Charnley, F. L.	Johnson, O.	Smith, G. A. C.
Clark, B. W. S.	Karls, Theodore	Spohr, George S.
Clay, W. W.	Lautrop, Paul C.	Starbuck, H. F.
Cleveland, L. D.	Leshner, W. T.	Stiles, C. L.
Cobb, H. I.	Longhurst, William.	Strippleman, William.
Cobb, Oscar.	Matz, Otto H.	Sullivan, Louis H.
Cochrane, J. C.	Miller, C. C.	Thomas, C. P.
Colton, A. M. F.	Moody, A.	Tilton, J. N.
Cudell, A.	Moore, J. H.	Townsend, F. B.
Deam, H. P.	Otter, John.	Treat, S. A.
Dixon, L. B.	Palmer, C. M.	Vigeant, G.
Drake, W. H.	Pashley, A. T.	Weirzbieniec, J. A.
Druiding, A.	Patten, N. S.	Wheelock, O. L.
Egan, J. J.	Pierce, O. J.	Whitehouse, F. M.
Edbrooke, G. H.	Quackenboss, L. G.	Willett, J. R.
Edbrooke, W. J.	Rae, Robert.	Wilson, H. R.

The associates from cities and towns, outside Chicago, were as follows:

Alexander, J. F., Ind.	Baldwin, M. H., Tenn.	Beaver, L., Ohio.
Allen, F. S., Streator, Ill.	Ball, W. K., Iowa.	Bethune, Mrs., N. Y.
Annan, T. B., St. Louis, Mo.	Barnett, Geo. I., St. Louis, Mo.	Blake, J. S., Iowa.
Arey, C. D., Ohio.	Bauman, J. F., Tenn.	Brady, T. W., St. Louis, Mo.
Baldwin, G. G., Iowa.	Beattie, John, St. Louis, Mo.	Bruce, A. C., Ga.

- Buffington, L. S., Minn. Gombert, C. A., Wis. Matthews, W. S., Tenn.
 Bulkley, L. C., St. Louis, Mo. Goodwin, G. L. M., Minn. Matthews, J. S., Wyo.
 Bullard, S. A., Springfield, Ill. Guager, A. F., Minn. May, Charles F., Mo.
 Bullard, G. W., Springfield, Ill. Guines, W. G., Mo. McDonald, H. P., Ky.
 Carr, E. T., Kas. Hackney, W. F., Iowa. McDonnell, J., Wis.
 Chamberlin, S. E., Mo. Hall, S. J., Ohio. McNamara, J. H., Mo.
 Chandler, J. S., Wis. Hamilton, F. B., Mo. Meagher, James, Mo.
 Class, A. C., Wis. Hammatt, E. S., Iowa. Mendelshon, L., Neb.
 Clausen, F. G., Iowa. Harteau, D. M., Wis. Millard, D. W., Minn.
 Clayton, N. J., Tex. Haskell, J. G., Kas. Miller, G. H., Bloomington, Ill.
 Cobby, A. E., Dak. Hawley, W. A., Iowa. Mix, E. T., Wis.
 Cook, Edwin, Mo. Hayes, W. H., Minn. Morgan, T. H., Ga.
 Cook, S. A., Kas. Hellmers, C. C., Jr., Mo. Murphy, A. M., Ga.
 Cooke, J. E., Minn. Herthell, J. W., Mo. Nier, William, Mo.
 Cordner, J. G., Iowa. Hodgson, I., Minn. Osborne, G. W., Mo.
 Corser, F. G., Minn. Hogg, J. O., Mo. Osgood, S. J., Mich.
 Crapsey, C., Ohio. Hohenschild, H., Mo. Owsley, C. H., Ohio.
 Curtin, C. A., Ky. Hovey, G. T., Ohio. Parker, M. H., Mich.
 Cusack, W. H., Tenn. Hyde, F. D., Iowa. Payne, G. W., Carthage.
 Cutler, J. G., N. Y. Illsley, C. E., Mo. Pfeiffenberger, L., Alton, Ill.
 Davelear, William, Wis. Johnston, John, Mo. Philpot, T. N., Wis.
 De Knox, G. M., Mo. Josslyn, H. S., Iowa. Pipe, G. W., Mo.
 Dodson, W. C., Tex. Kane, J. J., Tex. Plack, W. L., Iowa.
 Douglass, James, Wis. Kent, E. A., N. Y. Plant, J. C., Minn.
 Drach, G. W., Ohio. Ketcham, E. H., Ind. Preston, J. N., Tex.
 Dunham, C. A., Iowa. King, G. E., Colo. Preston, S. A. J., Tex.
 Elgin, W. E., Elgin, Ill. Kirchner, H. W., Mo. Probst, H., Mo.
 Ellis, F. M., Iowa. Kledus, L., Mo. Ramsay, C. K., Mo.
 Emberly, Wm., Jerseyville, Ill. Koch, E. V., Wis. Randall, J. R., N. M.
 Falkerson, W. A., Iowa. Kouhn, J. J., Neb. Rapp, G. W., Ohio.
 Fallis, E. O., Ohio. Kramer, G. W., Ohio. Reinke, Aug., St. Louis, Mo.
 Fassett, E. F., Mo. Lee, C. H., Iowa. Ricker, Prof. N. C., Cham-
 Ferry, G. B., Wis. Legg, J. B., Mo. paign, Ill.
 Field, G. W., Neb. Leitz, Paul S., Peoria, Ill. Ross, W. L., La Harpe, Ill.
 Fisher, G. L., Neb. Levering, L. L., Mo. Robinson, W. G.
 Flanders, J. R., Tex. Lindsay, H. C., Ohio. Reed, J. W., Ind.
 Foley, W. E., Mo. Linthwaite, H. W., Ohio. Rennie, F. A., Mo.
 Forbush, W. R., Ohio. Lloyd, G. W., Mich. Roberts, J. W., Colo.
 Furber, P. P., Mo. Long, F. B., Minn. Rosenheim, A. F., Mo.
 Furlong, T. J., Mo. Martin, J. M., Iowa. Ross, J. W., Iowa.

Rowe, H. S., Ky.	Swasey, W. A., Mo.	Wall, N. W., Colo.
Rueckert, E. G., Ohio.	Taylor, E. H., Iowa.	Washborn, L. P., Kas.
Sanborn, W. W., Iowa.	Taylor, J. K., Minn.	Weary, F. O., Ohio.
Schwiefurth, C. F., Ohio.	Taylor, J. S., Mo.	Wehle, O. C., Ky.
Smith, O. C., Ohio.	Terrell, Elah, Ohio.	Williams, C. J., Ohio.
Smith, Sidney, Neb.	Thompson, R. F., Ohio.	Wirth, George, Minn.
Smith, A. L., Mo.	Treherne, H. S., Minn.	Wood, L. M., Kas.
Staltze, G., Wis.	Tubbersing, F. R., Quincy, Ill.	Wright, A. P., Mo.
Struck, C. S., Minn.	Tyndall, W. H., Tex.	Wykoff, J. C., Iowa.
Sully, T., La.	Van Brunt, A., Mo.	Yost, J. W., Ohio.

The third annual convention was held within the Permanent Exhibit hall, in November, 1886. President Adler delivered the address. He quoted from a French journal on the progress of American architecture: "Thirty years ago there were, perhaps, throughout the entire United States of North America, ten edifices of such nature as to call forth the serious approbation of the European architect. What a change to-day! There has been a progress with a speed that can only be likened to a locomotive running under full steam. The United States has become, in the last thirty years, a country where Europe should seek its models. * * * Bravo, America!" L. H. Sullivan read an able essay on "Inspiration;" W. W. Boyington, one on his own experience in building foundations; one by Professor Ricker, on "Architectural grammar;" one by Isaac Hodgson, of Minneapolis, entitled "Hints on a national style of architecture," and one by Ketcham, on "Insane hospitals." The paper by John W. Root, on "Architectural freedom," was read at a subsequent social meeting held in the rooms of the Union League club; but one by Dr. De Wolf, on the "Relation of state medicine to the profession of architects," was delivered before the convention. The convention, complete in all appointments, elected the following named officers: J. W. Root, president; J. F. Alexander, secretary; S. A. Treat, treasurer; G. W. Rapp, Charles Crapsey, G. M. Goodwin, D. Adler and C. A. Curtin, directors. A paper, by Mr. Illsley, was ordered printed.

The fourth convention of western architects was held at Cincinnati in November, 1887. During the year ending November 1, state associations were organized in Tennessee, Wisconsin, Alabama, Kentucky, Michigan, western New York and Arkansas. Minnesota, Iowa, Illinois, Missouri, Kansas, Ohio, Indiana and Texas had previously organized, and all except that of Indiana were progressing. Reports of the several committees were received and discussed, and the following named officers elected: Sidney Smith, Nebraska, president; J. F. Alexander, Indiana, and W. C. Smith, Tennessee, vice presidents; N. S. Patton, secretary, and Samuel A. Treat, treasurer. The collection of drawings and photographs presented was large, but did not equal in number or interesting features the first exhibit of such works held at Chicago in 1884.

The fifth annual convention assembled at Chicago in November, 1888. The proposition to urge the extension of the French decimal system to weights and measures, as well as to money, in the United States, was received with enthusiasm, as was D. Adler's report on con-

solidation. W. W. Carlin, of Buffalo, was elected president; L. S. Buffington and Mrs. Louise Bethune, vice presidents; N. S. Patton, secretary; S. A. Treat, treasurer; and Sidney Smith, A. Van Brunt, C. Crapsey, S. M. Randolph and F. Baumann, directors. This association was consolidated with the American Institute of Architects as related in the history of that body in a former page.

Without the walls of Paris, Rome, and, in a lesser degree, Vienna, women have been unknown in architectural circles. In 1891 Boston was admitted, so to speak, into the exclusive circle, and the spell of inactivity which hung over American girls in this department of art was broken. The prizes offered for first and second designs for the Woman's building of the World's Fair presented the opportunity, and Boston girls won. Sophia G. Hayden, who took the first prize, is a girl in her early twenties, who came from the Roxbury high school to the Institute of Technology and took the complete four years' course, graduating with the class of 1890. Her home is on Forest Hills street, Jamaica Plain, and she is teacher of mechanical drawing in the Elliott school. She is quite a reserved young woman, gifted with tremendous perseverance and fondness for her work. She made her designs at home, working in her own room during the hours before and after her work of teaching drawing. Except a Miss Rockefeller, who graduated in 1888, Miss Hayden was the first to take a complete course in the institute. Louise Howe, who took the second prize, is a Cambridge girl, who resides on Appleton street. She is a draughtswoman in the office of Allen & Kenway. Her work on her design was done at the institute. Before going for her two years' special study in architecture she had been for four years at the museum of fine arts.

Among interior decorators women have attained an enviable place during the last decade, and in no place more than here have they shown the extent to which original designs may be carried. A reference to the history of the society of decorative art will point out the liberality of organized art workers and supporters of art in the city, but it gives only the smallest idea of the number of workers and patrons to be found here.

The Illinois State Association of Architects was organized early in the last decade. In 1884 W. W. Boyington was elected president, Henry L. Gay, secretary, and Louis H. Sullivan, treasurer. D. H. Burnham was chosen president in 1886 and L. H. Sullivan, secretary. The officers elected October 16, 1886, were D. Adler, president; S. A. Treat and N. S. Patton, vice presidents; C. L. Stiles, secretary; S. M. Randolph, treasurer; L. D. Cleveland, John W. Root, C. M. Palmer and William Holabird, members of the executive committee. In March, 1887, a paper, entitled "What are the present tendencies of architectural design in America?" was delivered by John W. Root; Dankmar Adler, C. L. Stiles and W. W. Boyington also spoke on this subject, the latter claiming there was now no place for the sturdy Tuscan or Doric, the graceful Ionic, the gorgeous Corinthian or the masculine Composite. They are historical even now in the United States. He was not so sanguine as his brother speakers of seeing an American national style of architecture. In April, 1887, L. H. Sullivan delivered an essay on "What is the just subordination in architectural design of detail to mass?" He pointed out that as man is something more than an animal, so is architecture

infinitely more than building, or in other words that architecture is a building with a soul. W. W. Clay, Frederick Baumann, C. M. Palmer and J. J. Flanders delivered instructive addresses in May, 1887. In June a paper on the uses of glass and paper in house building was read by John W. Root.

The elections of October, 1887, resulted in the choice of the following named officers: Samuel A. Treat, president; L. D. Cleveland, first vice president; Clarence L. Stiles, second vice president; R. C. Berlin, secretary; H. W. Hill, treasurer; L. H. Sullivan, W. W. Clay, John W. Root and Alfred Smith, executive committee. William W. Clay was elected president in November, 1888, William Hollabird and F. Baumann, vice presidents; O. J. Pierce, secretary; C. M. Palmer, treasurer, and Messrs. Treat, Beaumont, Sullivan and Stiles, directors. The report of a committee, formerly appointed to devise means for the establishment of an Architect's Protective League, as outlined by L. H. Sullivan, reported November 17, that the plans were feasible and were looked upon favorably by correspondents. The legitimacy of an association for mutual assistance and protection in courts of law was suggested; but the author pointed out that the real object of the league was to have authentic legal opinions on all questions relating to the profession.

The question of complete freedom in building was considered by the Illinois State Association of Architects in February, 1888, and the proposed revision of the old building ordinances discussed. At this meeting President Teall, of the Underwriters board, Kimbark, McVicker and Dixon, of the Citizens association, and E. A. Cummings and W. D. Kerfoot, of the Real Estate board, spoke on the subject. The system of the "sky-scraper" buildings was condemned, for many reasons; that of making the building of brick or stone houses within the old fire limits compulsory was commended, but the spirit of the assembly was to give the greatest liberty to house builders, without the old fire limits, it being understood that the greater number of workingmen who owned their own homes, the greater would Chicago be. C. G. Dixon, however, dissented, and would prevent, if possible, the erection of cheap houses, but admitted that the suburbs would have never applied for admission, if not guaranteed against the passage of a sweeping fire ordinance.

The Illinois Chapter of the American Institute of Architects was chartered under the general act concerning corporations, and sealed by Secretary of State Pearson February 8, 1890. The incorporators were S. A. Treat, George Beaumont, W. A. Otis, John Addison, J. L. Silsbee, D. Adler, C. L. Stiles and W. W. Clay. In March, 1890, the chapter adopted its constitution and by-laws and the executive committee, with the addition of Messrs. Root, Beaumont and Treat, was instructed to assume, on behalf of the chapter, or in conjunction with other organizations, the charge and management of the Institute of Building Arts. On April 14, W. W. Clay reported the final decision of the chapter to assume the ownership of the Institute; S. A. Treat and D. Adler were appointed a committee of management and H. W. Pree engaged as manager. Thus this useful institution, inaugurated and carried on in the interests of architects and builders by Henry L. Gay, became a national concern, in being made a part of the work of the American Institute of Architects, through its Illinois branch.

In November, 1890, the Illinois chapter elected the following-named officials: S. V. Shipman, president; Henry W. Hill, first, and W. A. Otis, second vice president; George Beaumont, secretary, and D. Adler, treasurer.

The Chicago Architectural Sketch club was formally organized February 26, 1885, and on March 12, that year, J. H. Carpenter was elected president; J. K. Pond and Harry Lawrie, vice presidents; W. G. Williamson, secretary; R. C. McLean, treasurer; Edward Dewson and George Beaumont, members of the executive committee. In June the first competition for "gate lodge" design was held, and the first place won by I. K. Pond. The action of the Illinois State Association, in October, 1885, recognizing the club, was thoroughly deserved. In November, 1885, Harry Lawrie was elected president; George Beaumont and J. H. Carpenter, vice presidents; W. G. Williamson, secretary; C. A. Kessell, treasurer; I. K. Pond, M. H. Church and R. C. McLean, executive committee. At this time the club boasted of twenty-four members, who assembled twenty times during the year and conducted a few competitions. The sketches produced gave evidence of the originality of the members and outlined the success which has since waited upon them. The competition for prize offered by the Anderson Pressed Brick Company was decided in March, 1886, the judges, Sullivan, Jenney and Root, awarding the three prizes to H. Lawrie, W. G. Williamson and J. Wechselberger.

In 1886 the club offered prizes for the two best clock-tower designs and the two best monument designs. The result of that competition is set forth in the following communication from the late J. W. Root, who, with W. L. B. Jenney and L. H. Sullivan, formed the committee of judges:

The committee chosen by the Chicago Architectural Sketch club to select the best designs among those presented in the competition for clock towers, awards the first place to "Timepiece" (Harry Lawrie); second place to "Professional" (M. G. Holmes). In the matter of the monument design we prefer for the first place "Bones" (T. O. Fraenkel); second place "Memento" (Fred R. Hirsch). It is perhaps just to say that Mr. Jenney preferred the drawing marked "Chalk" for first place; and that Mr. Sullivan preferred "Amateur" for second place. Mr. Jenney writes that had "Professional" been drawn equally well with "Timepiece" he would have given it first place.

In September the "library," "drinking fountain," "store front" and "shop" designs were in competition. On November 15, 1886, the first annual exhibit of drawings was held in the Builders & Traders Exchange. There were twenty-two initiation sketches and one hundred and seventy sketches of all kinds exhibited. The election on the same date resulted in the choice of George Beaumont for president, C. W. Trowbridge, treasurer, and the re-election of the secretary. In November, 1887, C. J. Wagner was chosen treasurer, while the president and secretary were re-elected.

The election of officers for 1889 was held in November, 1888. W. G. Williamson, president; W. B. Mundie and O. C. Christian, vice presidents; C. H. Kessell, secretary. The executive committee then chosen for 1889 was T. O. Fraenkel and F. L. Linden. A communication from the adjudicating committee, consisting of J. W. Root, W. L. B. Jenney, and L. H. Sullivan was read, and in the competition for the best design for a "church tower" and

gable, Oscar Enders was awarded first place; A. Heim, second place; and W. G. Williamson, third place. In the "entrance doorway" competition, A. Heim was given first place; A. W. Hompe, second; and C. B. Schaefer, third. Ex-secretary W. G. Williamson reported the acquisition of four seniors, three juniors and five honorary members during the year ending November 1, 1888, and Treasurer E. J. Wagner reported the collection of \$1,600, and the expenditure of \$1,200 for the same year. The officers chosen in November, 1889, were W. B. Mundie, president; W. R. Gibb, secretary, and E. J. Wagner, treasurer.

The Clark gold and silver medals and the Phinnister gold medal competitions were inaugurated by the sketch club. The Clark medals resulted from a grant by Robert Clark of \$1,000, the annual interest on which is to be applied to the purchase of gold and silver medals for the leading sketchers of original architectural designs. The donor has been for years engaged in the manufacture of structural iron, and took this method of improving the character of design. In December, 1888, the following letter was addressed to him.

"At a meeting held by the committee appointed by you, consisting of Messrs. William W. Boyington, Dankmar Adler, W. L. B. Jenney, Daniel H. Burnham, and Henry Lord Gay, to consider the disposition of your generous offer of \$1,000, contributed for the benefit of architectural progress, adopted the following resolution: *Resolved*, That the donation of Mr. Robert Clark will best serve the interests of the architectural profession if its income be applied for the award of a medal or medals, to be annually awarded to the victor or victors in an architectural competition by draughtsmen (not practicing architects, and under thirty years of age); these competitions to be instituted under the auspices of the Chicago Architectural Sketch club. In case of the disbandment of the C. A. S. club, the fund should revert for the same purpose to the Western Association of Architects, or to such architectural association with which it may become merged, unless the trustees, when appointed, shall deem it wise at any time to transfer the said income over, for the same purpose as above mentioned, to a school devoted to architectural education, which may be hereafter established in Cook county, in which case, at the option of the said trustees, they may cease to apply said income to the sketch club competitions, and instead thereof use it for providing medals for competitions of a similar character in the school proposed, and under rules found by its faculty. It should be understood that the medals presented at these annual competitions shall be known as the "Robert Clark Testimonial." It is decided (by this committee, appointed to suggest the disposition of the fund contributed by Mr. Clark) that he shall appoint his own trustees to carry out the resolutions as above provided. It is the sense of this committee, and we believe will be the unanimous voice of the architectural profession, when informed of this testimonial, that Mr. Robert Clark has in his voluntary offering created a precedent which we hope and believe will extend to a reality, the possibilities of which are outlined in this resolution, viz., a school of architecture established in Cook county. And we hereby tender to him the warmest expression of our appreciation of his kindness."

The second competition of 1890, for the Clark medal took place in November, with the following results: W. B. Mundie, of Chicago, gold medal; Arthur Henn, of Chicago, silver medal; J. C. Green, of Denver, first bronze medal; F. R. Hursh, of New York, second bronze medal; C. F. Bragdon, of Rochester, N. Y., third bronze medal. William B. Mundie presided over the club in 1890, the same year in which he won the gold medal in the Clark competition. The officers elected in November, 1890, were W. G. Williamson, president; T. O. Fraenkel and W. B. Mundie, vice presidents; W. R. Gibb, secretary; E. J. Wagner, treasurer, and they with Arthur Henn, silver medalist, and F. L. Linden were chosen members of the executive committee. The committee on awards of the Clark medals competition reported in December, 1890, which report was signed by N. C. Ricker, Lorado Taft, D. Adler, Henry I. Cobb and S. A. Treat.

No less than fifty-six subjects were presented at the monthly competitions or meetings of the club, among them being papers on travel and sociology. The readers of the more important papers are named as follows: Mr. Junge, on "Terra cotta;" Edward Dewson, "Stained glass;" J. H. Carpenter, "Theaters—Plaster modeling;" J. K. Pond, "Polychromatic ornaments;" George Beaumont, "Brick work—Architectural aspirations;" W. B. Lord, "Chemical formation of building stones—Slate;" C. A. Kessell, "Greek and Roman architecture;" M. G. Holmes, "History of architecture in the middle ages;" E. Wagner, "Hardwood finish;" C. W. Trowbridge, "Iron work;" W. G. Williamson, "Applied ornament;" Louis H. Sullivan, "Style—Imagination;" John W. Root, "Style—Broad art criticism;" W. M. Green, "Heating and ventilation;" R. E. Schmidt, "Byzantine ornament;" F. L. Linden, "Decoration;" O. C. Christian, "Ancient and modern architecture;" George W. Maher, "Originality in American architecture;" F. L. Blake, "Ornamental brick architecture;" W. L. B. Jenney, "Evolution of styles—Steel in building construction;" Martin Moylan, "Practical plumbing;" F. L. Lively, "Greek architecture;" F. Wagner, "Terra cotta—Origin of moldings;" W. B. Mundie, "Originality in design—Exterior *vs.* interior;" H. C. Frost, "Artistic metal work;" F. Parmentier, "Style of Francis I.;" A. W. Hampe, "Colonial architecture;" T. O. Fraenkel, "Wood carving;" Henry L. Gay, "Architectural publications;" R. Wood, "Modern buildings;" D. Adler, "The factor of safety;" J. W. Root, "Architectural design and fireproof construction;" J. G. McCarthy, "Specifications;" D. H. Burnham, "The practice of architecture;" Paul Mueller, "Practical iron work;" J. Beekman, "History of perspective;" R. C. McLean, "What I know about draughtsmen;" E. H. Hoepfner, "Fireproofing;" W. E. Kleinpell, "Dormers;" D. H. Perkins, "Systems;" J. E. Youngberg, "Architects up to date." There were the names of twenty-three honorary and associate members and of fifty-five regular members on the rolls in June, 1891.

The sketch club was organized to create an idea of the value of original work in the minds of draftsmen, and the objects of organization have been faithfully observed. The draftsman, or draughtsman, is part and parcel of architectural life. Webster states that he is "one who draws writings or designs;" but the definition by W. L. B. Jenney, who must be considered as an authority, is: "He who draws well everything and anything. He draws his salary, and when dressed in his best of a pleasant Saturday afternoon, walking down State street, has been known to draw the girls' eyes. In the offices, the popular idea of a draftsman is the fellow who receives small pay and does all the work. He is the one who should be credited with all that is fine in the thousand and one fine buildings; all that is bad being due to the interference of that old fogey, the architect."

The Art Guild was organized prior to 1883 and established quarters in the old Fidelity bank building on La Salle street. It was formed to meet the needs of association and criticism. In 1883 John W. Root was president and Louis J. Millet, secretary.

Only a quarter of a century ago was the American Association of Architects organized. Only a few years ago did it effect any great things, when it gathered into its fold the state and municipal architectural societies, and won recognition in the older schools of Europe.

Only this present year did the question of establishing a national bureau of architecture in connection with the Bureau of Education present itself to the national authorities. The Bureau of Education, which is now one of the subordinate bureaus of the Interior Department, has been growing, and now occupies a separate building. It is thought it would be a good thing for the administration of public affairs if this bureau could be enlarged and its head made a member of the cabinet. The enlargement of the plan of the bureau should then include fine arts and architecture. The supervising architect, who now has his bureau in the treasury, would be transferred to this new department. Everything relating to the fine arts, to architecture and general education would then be under the direction of one man. This would correspond to the department in France, presided over by *le Ministre des Beaux Arts*. A department of a permanent character would soon draw to it work of the highest class. Any one of a position good enough to be selected as a member of the cabinet, would undoubtedly have some requirements for the position. At any rate, he would have such a sense of responsibility from the prominence of this position and the consequent importance of his work, that he would not dare to settle questions of art and architecture upon political or friendly lines. The designs for a public building are now all prepared at one small bureau of the treasury. In the place of this it would be proposed to throw open to the architects of the United States an opportunity to submit their plans. This result would stimulate competition, and awards would be great encouragement to the development of architecture throughout the country.

The Permanent Exhibit of Building Materials, the first of its kind in the world, was established in December, 1883, by Henry Lord Gay. His desire, as expressed in the *Building Budget* of February, 1885, was to "concentrate everything worth knowing and seeing in architectural construction in one general display, to compile an illustrated dictionary of constructive architecture that shall be available to all who are interested in the subject." During the first year of its existence there were at least twenty-five thousand visitors to its first home, at 15 East Washington street, and within fourteen months from the date of its beginnings. The *Building Budget* was brought into existence to forward its claims and win for it a greater number of visitors or inquirers. In November, 1884, the Western Association of Architects assembled in this hall. On March 19, 1885, the executive committee of the State Association of Architects of Illinois resolved to adopt the quarters of the exhibit as the headquarters of the association, in conjunction with the Western Society of Engineers and the Chicago Draughtsmen association. They were followed by the newly-organized Master Plumbers' association. In July the Master House-Painters' association met there in convention.

In November, 1883, Bauer & Hill, writing to Henry L. Gay on the subject of his proposed permanent exhibit of building materials, commended the enterprise, and on September 8, 1888, wrote a second letter drawing the attention of the originator of the exhibit to their letter of 1883, and acknowledging the benefits which accrued to the building trades through it during the half decade of its existence. W. W. Boyington wrote similarly in 1883 and

1888. The projector's own description of it and of the objects sought to be attained are here given as outlined in the first issues of the *Building Budget*:

PERMANENT EXHIBIT AND EXCHANGE
OF BUILDING MATERIALS AND IMPROVEMENTS,

Northeast Corner Wabash Avenue and Washington Street.

The exhibit and exchange is intended for the permanent display of all kinds of building materials and inventions, and shall be open free to the public every business day of the year. It is intended to make an exhibition only of materials, either natural or artificial, that are from the hands of the producer; accordingly, a local trade exhibition is not sought after, but it is intended to stimulate such trade by an exhibit of products that in detail form parts of construction and finish. It is desired that manufacturers, inventors, and special agents of the same, be only represented, as covering the entire demand sought for in the exhibit. The object and value of such a display is two-fold: For the building public it affords a valuable repository of information and a ready agent to reach desired articles; for the exhibitor it will prove a valuable advertising medium, placing the actual material before the particular public from whom the demand for the same is anticipated. The business regulations of this enterprise, briefly stated, consist of exhibition spaces classified and arranged in departments of the same classes of materials together, and surrounded by broad aisles. Instructed attendants will be in charge of the several divisions, while exhibitors and patrons shall have free access to transact business on the floor of the exchange. The management of the exchange shall remain strictly impartial as to the merits of the exhibits, but will protect each and every display from abuse and acts of petty jealousy by anyone, and will prevent admittance to every irresponsible party or materials of known doubtful reputation. Dispatch boys and telephone will be provided for communication with every local house and firm in the city that is represented, and those located out of the city will receive as prompt attention by mail, regarding any inquiries for their goods. The limitation as to floor breadth of exhibit spaces will be confined in depth to full or half widths, by such frontage as may be desired by exhibitor, and a limitation of height of eight feet to all exhibits, except those against walls. A charge of \$5 per year per square foot for space taken will be made, and covers the entire demand. The management guarantees ample advertising in technical, local and country newspapers, that the public may be continuously informed of the existence of the exhibit and exchange. Prominent architects and building associations have given encouragement to this enterprise, and it is designed to have a builders' and mechanics' exchange room and society rooms for the regular meetings of building associations in connection, and it will be the aim to draw all building interests to this institution as a common center.

In February, 1886, a proposition was made to Mr. Gay to join issue with the Builders & Traders' exchange i. e., to place the exhibit under control of that body, and remain as manager at a stated salary. Mr. Gay agreed to the proposition on February 27, and on March 9 the question was considered by the builders and traders in special meeting. Owing to some influences within the organization, the proposition of its committee was rejected after an animated debate between the friends and opponents of the measure, as related in the history of that association. While its value was duly estimated and the efforts of Mr. Gay to maintain such an excellent institution duly appreciated by a large minority of the exchange, and even by many of those who voted against the proposition of 1886, the influence of a few leading spirits was cast against Mr. Gay rather than against the permanent exhibit, which he established and carried on, without the aid of the organized trades, until May, 1888, at 15 Washington street, and subsequently in the present quarters from May, 1888, to May 1, 1890, when the newly organized chapter of the American institute became the owners. This was something worthy of the Chicago architects. The chapter relieved the individual of guarding an exhibit for, and expending money in, the interest of the building community. Assum-

ing control, D. Adler and S. A. Treat were elected trustees. They secured the services of H. W. Perce as manager, and the perpetuity and growth of a most useful enterprise were guaranteed. Since May 1, 1890, the exhibits of building material have quadrupled, and many of the contemplated educational features have been carried into effect.

The materials exhibited are outlined in the catalogue prepared by H. W. Perce and issued in August, 1891, from which the following descriptions are taken:

A grouping of ornamental terra cotta, including a mantel set up complete, bass-reliefs, medallions, finials, blocks and other exemplifications of constructional terra cotta of different colors, the whole forming a very attractive exhibit, and showing many beautiful designs.

An ebonized and gilt stand, containing panels of soapstone finish in different tints on a cement backing; a tablet of cement on ordinary wood lath, finished in imitation of Numidian marble; a tablet of Potter blackboard, and small samples of cement and soapstone finish, all showing the beauty and strength of these materials, and their adaptability to wall plastering, wainscoting, etc.

A pyramid showing four sizes of exhaust or ventilating fans, together with a Johnson high-speed engine especially designed for operating these fans. The largest fan is connected with the engine, which is a very simple and compact piece of mechanism, all parts liable to injury from dust being completely protected.

An Alberene soapstone laundry tub which is highly sanitary and very durable, being absolutely non-porous, and made of the hardest natural soapstone obtainable.

A highly artistic and beautifully finished exhibit of marbleite or improved seagliola, in the form of a mantel and niche, supported on both sides by columns and pilasters, and further embellished with panels of bisque-finish marbleite. The exhibit is eight feet wide and ten feet high, and shows in harmonious combination imitations of the following marbles: Egyptian black and yellow, Orient red, Sienna, Vermont, Griotte, Blue Belle, Lisbon and Rosa di Bologna. The entire exhibit is an exponent of the adaptability of marbleite, where highly decorative effects are desired and at a moderate cost. A flooring of marbleite is also shown.

A large plate glass show case, containing samples of all forms of the Bower patent sewer gas trap, which the manufacturers claim is a highly effective trap. The principal feature of the Bower trap is a floating rubber ball that is held tightly against the inlet from fixture by the pressure of water in the trap, thus preventing the return of sewer gas. When water is discharged into the trap, the ball simply moves aside under the pressure, allows the water to pass and then returns to its place.

A series of polished marble slabs in harmonious combination, supported by a base of rock-faced Georgia marble, shaded down from white to dark mottled ereole. This base shows the adaptability of Georgia marble for outside work, trimmings, etc. A floor of light and dark Georgia marble tiles, with a border of Tennessee marble and a turned pedestal of Georgia marble are shown. This exhibit includes the following marbles: Campagna, Sienna, St. Anne, black and gold Egyptian, Numidian, Italian, Tennessee (pink, old and chocolate),

Georgia (in all colors), Champlain and serpentine green. A slab of beautiful Mexican onyx is also shown.

Two iron sewer and tide traps, and four iron cleanouts for sewer and drain pipe, together with three forms of urinal traps. These are all patented devices, and the manufacturer claims them to be highly sanitary in their action.

Several blocks of building stone showing Portage red, oolitic, Illinois limestone, Ohio blue, blue Bedford and buff Amherst.

An oak mantel, with beveled-plate mirror, tiled fireplace and grate with andirons complete.

A sample of ornamental steel ceiling, highly decorated; several samples of this material, both decorated and in its natural form; finials, panels, brackets, etc., all of metal, and designed for both exterior and interior decorative work. The entire exhibit is very attractive, being highly artistic in its arrangement.

A house filter. These filters are designed to be located at the point where street supply enters the house, and thus deliver filtered water to all fixtures, not only for drinking and culinary purposes, but for washing and other uses. The operation of a single valve readily cleans the filter. The filtering medium is white quartz.

A button-house heating boiler, for steam or hot water, and using hard or soft coal, set up complete. The principal feature of this boiler is the fact that it is hung and evenly balanced on wooden standards which allow of its being readily tipped over, when the bottom plate can be taken off and all interior parts easily cleaned. The manufacturers claim many points of merit in the button boiler, among them its compactness, vertical loops, a grate that operates effectively and the quality of material used throughout.

A grouping of samples of different grades of boiler plate steel, showing laps, flanging and elongation, together with certificates of chemical and physical analysis. This steel is the product of the Carbon Iron Company's mill, at Springfield, Ill.

An elaborate cabinet with folding and revolving wings, showing over thirty different designs and forms of Linerusta Walton, from the narrowest molding up to large sheets for wainscoting and wall decorations. The entire exhibit is very attractive, as this material is highly decorative in its character and permits of extensive and artistic gilding and coloring. The manufacturers claim it to be very durable and easily cleaned, as well as beautiful.

An artistic grouping of Roman and Venetian marble mosaics in different designs and forms, showing mantel facings, hearths, borders, etc., together with a portrait in mosaic work. The entire exhibit is an exemplification of the highly decorative quality and durability of marble mosaics.

A highly ornamental grouping of the different products of the Chicago Hydraulic Pressed Brick Company, in the form of an elaborate exhibit piece seven feet wide and eight feet high, containing columns, arches, pedestals, etc., and showing the following makes of bricks: Chicago, St. Louis, Findlay & Collinsville hydraulic-press brick, in red, gray, buff and granite colors, together with Roman tiles of same colors, enameled brick of all colors,

both of English and American manufacture. The entire exhibit is laid in Ricketson Milwaukee mortar color. This color is also shown by means of four ornamental glass vases.

A complete temperature regulating and controlling plant in full operation, and consisting of a hydraulic air-compressing engine; tank for compressed air; pneumatic and diaphragm valves, thermostats, tubing, wiring and batteries. This system is designed for use in any building where it is desired to control and regulate the temperature, and operates as follows: The engine keeps the tank full of compressed air, which is controlled by means of the pneumatic valves; they, in their turn, being operated by an electric current from the thermostats, and allowing the passage of the compressed air to valves located on the radiators or other heating apparatus. By adjusting the thermostats, the temperature can be regulated to any desired degree at any time.

A stand on which are grouped samples of Anderson pressed brick of all colors, sizes and forms, showing ornamental bricks of beautiful and varied designs; Roman brick in plain colors and mottled; rock-faced brick, returns, starters, angle bricks, panels, quarter and half rounds, etc. The entire exhibit presents a very attractive appearance, and shows all colors from a light cream to a dark chocolate.

A Nautilus siphon and a Lotus washout water-closet, set up complete and in operation. The principal feature of these closets consists in employing a device for attaching the seat to the bowl, thus doing away with all superfluous woodwork, and where tile or marble wall finish is used, obviating the necessity of any drilling, and also leaving the back part of closet as accessible as the front or sides. The manufacturers claim these closets to be highly sanitary; that the Nautilus, especially, is silent but powerful in its action, and possesses a very deep seal. The exhibit is an attractive one, as the bowls are highly decorated and set on marble slabs, and the seats, covers and tanks of mahogany and antique oak.

Two gas stoves and a Jewel circulating water heater; the larger stove is known as the Jewel Grand No. 338 and the smaller as the Jewel Grand No. 307. Both stoves are designed for all kinds of cooking, baking, roasting and broiling in the ovens, and frying or other modes on the top burners. The heater is for supplying hot water to the kitchen boiler. These stoves use the sawed slot burner, and the makers claim for them great efficiency and economy.

A stand containing over twenty-five samples showing all sizes and forms of gate valves (both screw and flanged end), including radiator valves, throttle valves, automatic drip valves, angles, automatic screw and yoke, ammonia valves, etc. The makers claim the workmanship and material of these valves to be of the very highest character, and that they are suitable for steam or water and very efficient in their action.

A handsome oak and plate-glass showcase, containing samples of electrical specialties, including annunciators, batteries, push buttons, bells, speaking tubes, switches, alarms, etc. The entire exhibit is set up in running order and forms a very attractive display.

A series of the specialties, all set up complete in running order and showing a New York safety dumb waiter, a Manhattan dumb waiter, a Humphrey hand elevator, and an

invalid lift with Humphrey fixtures. The entire exhibit presents a very attractive appearance, the woodwork being of cherry and oak, and all the fixtures bronzed and gilded. The makers claim their specialties to be very efficient in their action and to possess all necessary requisites for safety, speed and ease of operation.

An artistically arranged combination of machine-embossed woodwork, for interior finish and decorations, consisting of a framing made of gum, oak and birch, embossed in different designs and supported by ornamental brackets; samples of different woods embossed in various designs, and all showing the possibilities of this work where highly decorative effects are desired at a moderate cost.

A No. 5 Champion gas consuming furnace, using any fuel. The manufacturers claim for this furnace a large heating surface, that it requires but little fuel in proportion to its size, owing to the fact that it consumes the greatest part of the smoke, gas and all combustible matter. They also advocate its use in conjunction with their patent ventilating system, by means of which they claim to give a continual supply and circulation of pure warm air.

A handsome structure in natural cherry, set up complete and in full working operation, showing Venetian blinds, Hill's sliding blinds and Perfection sliding screens, and Clark's rolling wood partitions and rolling steel shutters. Over forty different varieties of wood and finishes for Venetian and sliding blinds are shown, and the whole exhibit presents a very attractive appearance.

A complete system of piping, including supply, waste and soil pipes, together with branch pipes for fixtures, with valves, traps, etc., all supplied with water from a large tank and so arranged with valves, pulls, glass traps, etc., that an exhibition of house drainage under all and varied forms and conditions can be given in full view of and thoroughly appreciated by the examiner. The entire exhibit is designed to show trap siphonage and its attendant dangers and the prevention of same by the use of the McClellan anti-siphon trap vent. The McClellan vent is a device which can be attached to the crown of a trap, and permits of a supply of air to the trap, but in the event of any back pressure is tightly closed by means of a cup floating in a seal of mercury. The exhibit is a very attractive one, as the many combinations and arrangements of pipes, traps, etc., permit of several interesting experiments.

A section nine feet square of patent sheet steel ceiling, showing panels, cornice, center pieces, etc., in varied designs, and all highly decorated; a sample of sheet steel wainscoting, grained in imitation of oak; several panels of sheet steel ceiling undecorated. The manufacturers claim this ceiling and wainscoting to be fireproof and sanitary; that it permits of any degree of decoration, and is applicable to ceilings and wainscoting of every description, and that a rebate on insurance rate is allowed where the ceiling is used.

A structure showing the application of the Duplex joist hanger, a device which is a safe method for framing joists, headers, trimmers, tail joists, beams, etc., and is designed to take the place of the ordinary wrought-iron stirrup. The exhibit shows all sizes and forms of this hanger.

A grouping of brick chimneys, showing Hansen's patent chimney top, both in plain and ornamental designs, together with several samples of salt-glazed wall-coping and sewer-pipe.

Sinclair Stuart's patent oil, grease and dirty water extractor, for surface condensers, set up complete with oil extractor, valves, gauges, and (in the case of this particular machine) with ammonia joints especially designed for ice machines. The manufacturers claim this device to be of the very best material and highly efficient in its action.

An Excelsior combined feed water heater, purifier and condensation receiver complete. The manufacturers of this device claim it to be highly economical and efficient, and to effect a saving in fuel of from ten to thirty per cent, and in water from twenty to forty per cent. They further claim that its use saves cost of receiving and expansion tanks, and numerous traps, valves and fittings.

A handsome oak grille, eight feet wide and ten feet high, with columns and panels, all highly finished.

Two large slabs of Egyptian marble, one being $4 \times 3\frac{1}{2}$ feet, and the other $3\frac{1}{2} \times 2\frac{1}{2}$ feet in size, both the product of the quarries at Ste. Genevieve. The larger slab is of a plain shade, with but little mottling; the smaller is mottled with a deep red color.

A brick catch basin, with sewer pipe running into same, to which is attached a Flanody patent safety back water and sewer valve in running order. The manufacturer claims that this valve is automatic in its action, and that it prevents damage from back water.

A large two-light window set up complete, and showing the Gardner steel sash ribbon, pulleys and attachments in operation. It is claimed that by the use of these devices, windows will run smoothly and noiselessly, and that, owing to the fact of the steel ribbon being practically indestructible, the trouble from broken cords is avoided.

A stand on which are shown several Goetz-Mitchell anchor boxes for girders and joists, and timber caps for wooden posts. The anchor boxes are designed to be built into walls to receive girder ends, and consist of dovetail formed boxes, with a lug at bottom, which, with a notch in lower end of beam, forms the tie from wall to wall. The advantages claimed are that the air spaces prevent dry rot, and that in case of fire, a falling beam will free its own anchorage without damage to wall. The advantages claimed for the timber cap are simplicity, that all parts are held securely together, but that any section can fall without damage to those remaining. They further claim that insurance companies make a rebate in rates where these devices are used.

A handsome oak and plateglass showcase containing several samples of the royal check and waste clock. The manufacturer of this device claims that it presents many advantages, among them being the quality of the material used; that no locking is required; that it occupies but little space; that the operation is positive, and that it can be located at any point, as it operates easily and efficiently with any number of angles that may be necessary.

A large two-light window set up complete, showing a Standard reversible sash in full operation. By means of the devices and attachments, as shown in this exhibit, both upper and lower sashes of any window, although ordinarily working in the same manner as other sashes,

can be readily turned down into the room and the outside glass cleaned as easily as the inside, and without the danger incident to the ordinary way.

A sectional tubular boiler, with a Hotchkiss boiler cleaner attached, so constructed as to permit of a full view of the entire arrangement and operation of the Hotchkiss boiler cleaner. By means of a funnel located in the boiler at the point where most dirt, grease, etc., is likely to accumulate, the dirty water is taken up into a globe situated on the top of the boiler, where the sediment and dirt is caught, and from which it can easily be removed by means of a blow-off cock. The manufacturer claims this device to be highly efficacious in preventing scale and in keeping the boiler clean.

A Crystal siphon water-closet, set up complete in full working order, with highly decorated bowl, cherry seat and cover, and cherry tank, Tennessee marble floor and Italian marble wainscoting. The manufacturers of this closet claim it to be highly sanitary and very strong and efficient in its action; that it has a deep seal; that all workmanship and material are of the very best; and that it fills all the requirements of high-grade goods of this description.

A flooring of Boch ceramic flint tiles in many different and highly ornamented designs, together with a series of designs in ceramic mosaie.

A No. 4 B. Hooker pump, which the manufacturers claim to be very simple in construction, of superior workmanship and material, and highly effective in its operation.

A full-sized working model of the paragon self-retaining dumb waiter. The manufacturer claims this waiter to be easy of operation, noiseless, safe and rapid.

A composite structure showing fireproof and frame construction and the application of certain products where such forms of construction are used. The whole exhibit is designed to show the interior conduit system for electrically conduiting buildings so as to insure absolute safety. Many different styles of tube are shown, both concealed and exposed, together with switches, cut-outs, main junction and intersection boxes, incandescent lights, etc. The company claims many advantages in this system, one of which is the ready access to all wires at any time.

An ebonized stand on which are grouped many samples of globe, angle and radiator valves. The principal feature of the valves is the Jenkins disc, which, in different forms, is applicable to steam, hot and cold water, gas, ammonia and air.

A Jewell house filter, set up complete in running order, and supplying filtered water to a marble-topped drinking fountain, which also has a faucet from which ordinary unfiltered water can be drawn, and thus comparisons readily made. The fixtures are also arranged in such manner that the entire working of the filter is shown, including the operation of cleaning it, and the impure water incident to this washing can be drawn for examination. This filter is designed to supply an entire house, not only for drinking and culinary purposes, but for other uses, and a capacity of four thousand gallons per day is claimed for it. The operation of a single valve controls it, and the filtering material is crushed silica quartz.

A No. 3 Expert hot water heater is shown. Among the principal features of this heater

are its compactness, the fact that all parts are interchangeable, and its sectional arrangement, whereby the size and consequent capacity can be increased to any desired point by the addition of sections.

A Silent Wonder siphon water-closet, and a washout water-closet, known as Fig. 60, both set up complete and in operation, and making a very handsome exhibit, as the bowls are artistically decorated, the seats and tanks of cherry, and both closets placed against a wainscoting of solid cherry. The principal feature of these closets lies in the fact that they are operated by a push button (located at the side of bowl) by simply pressing upon the button, which causes the closet and tank to discharge simultaneously. The manufacturers claim these closets to be highly sanitary; of powerful action, silent, and operated entirely by water, without the use of springs, electricity or other power.

A handsome glass case, containing samples in various forms and sizes of magnesia pipe covering and insulation, and showing this material as applied to its various uses. The exhibitor claims magnesia to be highly effective for steam pipe and boiler coverings, lagging for locomotives, fireproofing of iron columns, beams, etc., and for floor and wall linings.

An Eddy electric motor and a series of samples of the Paiste electrical specialties, consisting of switches, sockets and cut-outs. The principal feature of these Paiste specialties lies in the fact of their being tinted, handpainted or finished in an artistic manner, and consequently adapted to use with interior decorations, wall papers, etc., of any kind. The exhibitors claim for them simplicity of construction and durability when in practical use.

An oak model of door, showing Lane's steel parlor door hangers in operation; the whole exhibit being supported on an oak stand, and all parts highly finished. The manufacturers claim for the Lane hanger the following points of merit: That it is made of steel throughout; the wheels run on a single steel track, and are shod with leather, insuring noiseless action; extreme simplicity, and consequent ease in putting them up; no warping of doors; anti-friction type of wheels and absolute adjustment of each hanger independent of the other at any time.

A stand containing large samples of the following building and flagging stones: Serpentine, buff Amherst, Kettle river, Kasota pink, Colorado peachblow, Bayfield, Connecticut brown, Pipestone granite, Euclid blue, Columbia building and Columbia flagging stone. The samples show rock-faced, tooled, smooth or polished surfaces, in accordance with their various qualifications.

A handsome natural cherry cabinet, so arranged as to show, in duplicate, panels of the various finishing woods named below, all finished with Murphy transparent wood finish. One panel of each pair shows a gloss finish and the other a rubbed finish. The woods shown comprise butternut, white and red birch, Georgia pine, manilla, white pine, whitewood, oak (six kinds), satinwood, prima vera, holly, rosewood, birdseye maple, mahogany, white maple, sycamore, California redwood, ash, chestnut and walnut. The exhibit is further embellished by means of groupings of the packages in which the Murphy varnishes and finishes are put up, and is surmounted by a large bas-relief of Murphy's trade-mark, together with views of

the Newark and Chicago factories. The entire exhibit presents an attractive and artistic appearance, and is highly interesting, as it shows not only the Murphy transparent finish, but shows it in its application to such a large variety of woods.

A full-sized air-tight cabinet or structure for ventilating and controlling the temperature and sanitary condition of the air supplied to any room or series of rooms, each independently of the other. The cabinet shown is designed to be built into the partition of any room, and supplied with fresh air from the corridor; it has a suitable air inlet to room, and is provided with means for warming, cooling, and refrigerating and purifying, or charging the incoming air with antiseptics or medicaments, all of these devices being readily accessible by means of a door opening into the hall. The patentee claims the device to be applicable to hotels, residences, prisons, hospitals, asylums, etc., and that by its use apartments can be made much smaller and still retain the proper requirements for inhalation and exhalation; thus not only economizing space, but increasing the capacity of any institution.

A composite structure designed to show the application of various forms of wood and iron construction. Two sides are of steel I beams; the walls showing the application of Maekolite hollow blocks to the making of fireproof partitions and the protection from fire of the structural iron. The third side represents wood balloon construction with thin Maekolite boards nailed on, taking the place of ordinary lath and plaster, which, the manufacturers claim, achieves as nearly as is commercially practicable, the protection of ordinary wood construction from fire. The ceiling of the structure is a suspended one, of form adapted to the requirements of ordinary fireproof construction. The floor is but partially finished, and shows in detail the adaptation of certain forms of Maekolite to the purposes of sound deadening. The entire exhibit is a very attractive and interesting one, as it is a complete exponent of the adaptability of the various forms of maekolite to the different uses for which this material is designed.

An iron structure and a grouping of the different forms and sizes of expanded metal, so arranged as to show the application and adaptability of this material to the various uses for which it is designed, including fireproof construction, office, lawn and railroad fencing, elevator guards and doors, fancy, light, ornamental iron work, baskets, hose reels, etc. The principal feature of the exhibit is an illustration of a system of fireproof construction and consists of a frame work of iron columns and floor beams covered on the outside with expanded metal lath and plastered with Portland cement. The ceiling is of expanded metal lath, plastered with ordinary plaster of paris, and an opening shows the method of fastening the metal lath to the under side of beams by means of iron clamps and punched and toothed rods. One supporting column is furred with iron furring, covered with expanded metal lath and partially plastered, showing this method of fireproofing columns. Openings are left to show how windows and doors can be provided for, and the entire exhibit is very interesting, as it presents in detail every feature of this system, which the exhibitors claim is applicable to wooden construction as well as iron; and they further claim that by the use of expanded metal and Portland cement, practically fireproof buildings can be erected for but little more money than frame ones, and for less than brick, and fire risks reduced to a minimum. They claim, in addition, that the

form of construction of expanded metal prevents expansion or contraction and consequent cracking or falling of plastering, and that it permits of the formation of a perfect key, thus insuring absolute rigidity of walls.

A grouping of ornamental constructional terra cotta of various shades. The principal feature of the exhibit is a highly artistic column, fourteen feet high, surrounded by medallions, panels, chimney tops, modelings from life in heroic size, blocks, keystones and many other exemplifications of terra cotta for ornamental and constructional work. The entire exhibit is very attractive, as it shows many forms and colors of terra cotta of varied and beautiful design.

A handsome oak stand, so arranged as to display many samples of the call, alarm and door bells. The special feature claimed by the manufacturers of these bells is electrical results without the use of batteries, and that this is accomplished by the bell being so arranged on a spring that a push button or a pull readily rings it. If the bell is located at a distance from the push button or pull, it is connected by means of a fine wire and levers, which latter have one long and one short arm, thus taking up any slack in the wire. Turning the bell itself winds it.

A 4x6-inch five-horse power vertical engine. The manufacturers claim the highest degree of workmanship and finish in their engines, and that they are highly efficient, very simple in construction and economical in fuel. They make a specialty of engines for electric light duty.

A window fitted up with metal, rubber-filled, adjustable weather strips. This weather stripping is put on in such a manner that it can be drawn away from sash when not required or when opening window, and pushed back into place readily when desired. The manufacturer claims that it makes a window absolutely weather-tight, and that its adjustment prevents unnecessary wear.

A sectional structure showing fireproof construction in detail, and the adaptability of the products to fireproof work of all kinds. The entire exhibit is very interesting, as it embraces examples of all forms and arrangements of hollow tiling, including walls, partitions, arches (both curved and flat), ceiling plates, coping, flues, etc. It further shows how walls and partitions are carried on the iron beams; how tie rods are put in; how ceiling plates are supported on iron rods by means of angle irons, or on wooden ones by the use of hooks. Both wood and ornamental tile floors, with concrete filling, are shown, together with the method of piping a fireproof building for gas, water, etc. The walls are plastered, and the wood finish for doors, windows, etc., is shown as it should be put up. The whole exhibit is a complete exemplification of this style of construction, and of all its varied requirements. In and around the structure are grouped many samples of various forms and sizes of hollow tiling, including column covering, flue linings, etc.

A structure so arranged as to show the Palmer metallic ceiling in a variety of highly decorative patterns, including ceilings, side walls, dados, coves, panels, etc. The manufacturers claim this material to be of steel plate, tinned and stamped in the different designs, and

colored by a process that insures lasting brilliancy; that it can be applied to old or new work; that it will not absorb disease germs, and is a fire retarder.

A large plate-glass showcase containing many samples of all forms, sizes and combinations of nickel and silver-plated faucets and cocks, claimed to be of the highest workmanship, material and finish, and consequently very strong and not likely to get out of order when in use. The exhibit is an attractive one, as the fixtures are carefully arranged, and most of them highly ornamental in character, show-enameling in various colors and designs, agate handles, etc.

A highly ornamental exhibit piece, six feet wide and eight feet high, showing the three shades of Parke county brown stone in various forms, and including rock-faced and tooled work, base, watertable and eap courses, columns and detail carving; the entire exhibit being an exponent of the adaptability of this stone to stone construction and ornamentation. Parke county brown stone is a sandstone, the product of a quarry at Mansfield, Ind. Its crushing strength is claimed to be nine thousand pounds to the square inch.

A large ebonized case, with plate-glass front, occupying this entire section, and containing over five hundred samples of different styles, designs and forms of bronze-finishing hardware, from the smallest drawer pull-up to the largest and most elaborate door-lock and handle. The exhibit is located immediately on the left of the main entrance to the rooms, and presents a very striking and attractive appearance, the case being seventeen feet long and twelve feet high, and the many beautiful samples symmetrically arranged against a black velvet background, and in such variety, that the entire finishing hardware necessary for buildings of any character can readily be selected (with the assistance of the large catalogues connected with the exhibit) by the visitor or examiner. The principal factories are located at New Britain, Conn., and the products are handled by all leading hardware dealers.

A door and wainscoting of red cypress, together with a table and several loose samples of the same wood, designed to show the varied shades and graining of red cypress, and its adaptability as a finishing wood. The exhibit also shows samples of curly and straight grained yellow pine; the wainscoting is capped with a mahogany rail, and the entire exhibit oil finished, with the exception of one side of the door, which is left unfinished as a test of the non-warping quality of red cypress.

A panel of wire lathing which is properly furred with ironfurring strips, plastered with a diagonal section of plastering, and so arranged by means of pivots and a frame that it can be turned around, and the key formed by the plaster readily examined.

A stand containing samples of all sizes and forms of the reliance safety water column, and solderless copper floats. This device is intended to call the attention of any one having charge of the boilers in case of low water or high water, by means of an alarm whistle which sounds in time to prevent any damage. The manufacturers guarantee the reliance safety column to be perfect in every respect and highly efficient in operation. The solderless floats in the column rise with high water and fall with low water, and, by means of a valve, permit the escape of steam through the alarm whistle, thus instantly giving warning of any danger.

The columns are fitted with water gauges, try cocks and sediment chamber, and can be tested in a moment's time.

An artistic grouping of large polished marble slabs, all beautiful samples of their various kinds, including Florentine and Florence Italian marble, together with Swanton marbles of the Griotte, Lyonnaise and mosaic varieties.

Sanitas siphon jet water-closet and a Sanitas recessed, standing-column overflow wash-bowl, set up complete in running order. The wash-bowl is fitted with the self-closing cocks and the Sanitas trap, and is set in an Italian marble slab with marble back and nickel-plated legs. The closet has a white bowl decorated in gold, and the entire exhibit presents an attractive appearance, being set up with a white glazed-tile flooring and wainscoting. It is claimed for the Sanitas water-closet to be noiseless in operation and great in efficiency, and for all the Sanitas appliances to be free from mechanism, and to possess strong, clean seals, and clean wash of all pipes and traps.

A full-sized, working model of Swezey's improved dumb waiter, with automatic catch, all complete. The manufacturer claims simplicity of construction, ease of operation, and safety.

A large-sized, galvanized iron self-cleaning kitchen boiler, complete, with sediment chamber and spigot. By means of a funnel-shaped bottom leading into the sediment chamber below, it is claimed that all impurities are removed from the water, and thus the boiler, circulating pipes and water-back kept free from all mud and sediment. The spigot permits the sediment chamber to be washed at any time.

A set of two solid white crockery stationary laundry tubs, complete, with galvanized iron stands and ash rim, and fitted with nickel-plated plugs, overflow grates and faucets. Also, sectional samples of American and imported tubs, and a frame colored plate illustrating sinks, wash trays, etc. The company claims their product to be perfectly sanitary, capable of standing extreme heat from steam, and guarantee them for thirty years.

A No. 80 North Star refrigerator and a combination kitchen cabinet are shown. The refrigerator is an exponent of the several sizes and various forms of refrigerators claimed to meet all requirements of use in apartment houses, dwellings, shops, etc. The principal feature of these refrigerators is the use of a series of dead-air chambers in place of charcoal or other filling. The kitchen cabinet is a labor-saving invention in the form of a table with revolving device underneath containing receptacles for flour, meal, spices and other kitchen articles of daily use.

An elaborate exhibit piece, built of ornamental and molded brick, in great variety. The exhibit is seven feet wide and eight feet high, the principal feature of the design being an arch supported on eight short columns, and surmounted by a cornice. The arch is filled in with unique pebble-dash brick, and the whole supported by a base of plain pressed-brick work. Around the base are grouped samples of pressed and molded brick in a variety of colors and designs, including Roman brick, large, square and oblong brick, buff, terra-cotta-colored and rock-faced brick.

A handsome pier of pressed-brick work in various colors, all laid up in mortar tinted with Toch Bros. non-fading Edinburgh mortar tinters, and so arranged as to show the tints to match brick and in contrast. The manufacturers claim that these colors cement the particles of mortar together, chemically combine and do not run.

A No. 718 Home Fortune range and a No. 28 Active Fortune range, both set up complete, and being exponents of the many sizes and styles of ranges. The principal features of the Home Fortune are the removable wrought steel ovens, large warming closets, ash sifter, improved box water-back, Smythe's prismatic grate and extra heavy castings, together with the fact that it has all the flues in the body of the range. The Active Fortune is especially designed for small kitchens, as it is fitted up with a Hayes' patent horizontal circulating boiler and a large warming closet over the boiler, and is very compact in every particular, thus economizing space. The company claims that the short distance between water-back and boiler insures a plentiful supply of hot water, and they further claim for both ranges economy of fuel and great efficiency.

A grouping of modern steam specialties, including automatic air valves, corner gate radiator valves, steam traps, temperature regulators, etc. The company claims the air valves to be positive against the escape of water and steam, their corner radiator gate valve to have full and free opening, and to be constructed on perfectly practical principles. In their steam trap they claim to employ a principle that is as original and practical as it is simple, and their temperature regulators they claim to automatically hold the temperature to any degree.

A structure illustrating the adaptability of mineral wool to the various uses for which it is intended, such as insulation, fireproofing, deafening, boiler and pipe covering, etc. The structure is in the form of a sectional miniature building, shingled on the outside. The under side of roof and ceiling joists and the inside of walls are lathed, partly with wire lath having iron furring, and partly with wooden lath, and all spaces behind lath filled with mineral wool. Two diagonal sections show the plaster finish. The floor is cut diagonally in half, and a plate of glass permits the floor deafening to be seen. From the center of floor rises an ordinary steam pipe with angles, elbows, etc., covered with mineral wool and showing its application to pipe covering. An electric light fixture at the back brilliantly illuminates the whole interior. The exhibitor claims mineral wool to possess great power in resisting the transmission of heat and cold; that it is practically indestructible by heat, a non-conductor of sound, and proof against rats, vermin and disease germs.

A working model in miniature of the Whecland fire escape. This escape is designed to remove people from burning buildings by means of small platforms, hung on an endless chain, operating simply by gravity within a fireproof shaft, and controlled by a governing wheel at the bottom.

The whole institute is a builders' school. Its control is vested in trustees and in the executive committee of the Illinois chapter of the American Institute of Architects. This committee comprises S. V. Shipman, H. W. Hill, W. A. Otis, George Beaumont and D. Adler. In connection with the institute proper are the bureaus of typewriting and stenography, information, and draftsmen.

The Manual Training school was incorporated April 11, 1883, and E. W. Blatchford, president; R. T. Crane, vice president; William A. Fuller, secretary; Marshall Field, treasurer; John Crerar, John W. Doane, N. K. Fairbank, Edson Keith and George M. Pullman, trustees. Henry H. Belfield was appointed director of the school. The corner-stone of the Manual Training school, Michigan avenue and Twelfth street, was placed, under direction of S. S. Beman, in October, 1883. The Commercial club donated \$100,000 toward the establishment of the school, which was opened February 3, 1884. This school graduated, at the commencement exercises in June, 1886, no less than twenty-seven pupils. The work shown by the students comprises much of all that is interesting and instructive to the building trades, and even to architects.

The Chicago Polytechnic, conducted by F. H. Harkins, came into conflict with the Builders & Traders' Exchange in February, 1891. It appears that it was the intention of the exchange to establish a trade school, but the Harkins college project was brought before the public first. The members of the Exchange contributed about \$6,000, to be devoted to the establishment of a trade school, when the amount would reach \$10,000, but the limit was not reached, and the school project was abandoned. Subsequently, Mr. Harkins, believing that his institution was under the patronage of the Exchange, continued to ask for financial aid, until the president of the Exchange notified members that his school had no connection whatever with the organization of builders and traders.

The establishment of a polytechnic school to be known as the Lewis institute was considered in the fall of 1889. The fund for its establishment was devised in 1877, by Allen Lewis, who left his property at his death in the hands of trustees to be devoted to the erection and sustenance of a polytechnic school and its necessary appurtenances, when the estate should amount to \$800,000. The fund then amounted to over \$1,000,000, and the intention of the trustees to erect a building in 1890, and open the school as early as practicable was expressed. Girls are to be instructed in certain branches of art, and young men are to receive instruction which will be useful to them in earning a living. According to the terms of the bequest, the trustees are to provide a large lectureroom or hall, and fine readingroom or rooms, and all necessary studyrooms to carry out the plan; the building when completed, together with the premises, to be forever devoted to the purposes specified and thereafter to be known as the Lewis institute; and upon its completion the trustees are to invest not over \$50,000 in the procuring of books, papers and pamphlets for the library, and the necessary fixtures, designs and apparatus for the studies and other rooms. The trustees are also to procure all necessary librarians and teachers. The design of the founder of this institute was most commendable. In December, 1890, the proposition to sell the Allen lots on Randolph and Union streets and purchase the Hoard homestead for the polytechnic buildings was received favorably.

The Mechanics' institute is now merged into the Athenæum. For many years it was the polytechnic school of the city. Its officers from 1870 to 1887 are named as follows in the order of president, secretary and treasurer: In 1870, Sanford Johnson, Henry Pethybridge

and W. W. Boyington; in 1872, Sanford Johnson, C. W. Spear and W. W. Boyington; in 1876-7, George C. Prussing, Andrew Groh and W. L. Peek; in 1878-9, William Floto, J. K. Boyessen and Murray Nelson; in 1880, John Wilkinson, H. W. Booth and Murray Nelson; in 1881, John Wilkinson, H. W. Booth and Murray Nelson; in 1882, J. H. Dow, H. W. Booth and Murray Nelson; in 1883, J. H. Dow, H. W. Booth and Murray Nelson; in 1884, George C. Prussing, George F. Francis and H. W. Booth; in 1885, B. B. Wiley, John Wilkinson and A. Grannis; in 1886-7, George C. Prussing, Andrew Groh and A. Grannis. J. M. Van Osdel was financial secretary in 1870, and C. W. Spear in 1876-8.

The Athenæum on Van Buren street and the Manual Training school of the Holy Family parish, are institutions capable of incalculable good.

Every branch of the builders' trades claims an organization. The painters and decorators, the artists, the ornamental plasterers, and the actual laborers in each department have their associations and in some instances their exchanges. Experience teaches that associations are necessary in modern times. An advocate of the extension of trade associations asks the question—"Cannot I get along without such aids?" He answers thus: Yes, one can "get along" without it, and can "get along," too, without many of the helps which experience has raised for the advantage of the world. Any one who chooses can "get along" without using the steam transportation which now whisks him over the continent from Atlantic to Pacific in as short a time as it formerly took to travel from Maine to New York. He may, if he choose, "get along" in the old-fashioned stage-coach, but his journeying would be rather lonesome, and his feelings rather mortifying on arrival to find that, though he has "got there all the same," his competitors have "been there" and gone. One may, if he choose, in these days of rapid concentration, "get along" without using the telegraph, or telephone, and may send his messages by mail, taking an hour or a day, instead of a few moments of time, but he will discover that it would be much wiser to use the means that his contemporaries are using, and save unnecessary friction in the accomplishment of his designs. One may "get along" without using the aids that machinery has brought to the various details of work. He may, for instance, plane all his lumber by hand instead of using the power planer; he may, in fact, refuse any and all of the lubricators which have been invented to ease and shorten labor, but by so doing he will "get along" painfully, and "get left," even though he "gets along." So, too, one can "get along" without the exchange, but it is a fact that cannot be disputed that he can get along much easier, accomplish much more in the same length of time, save travel, and avoid unnecessary labor by this very simple means. The value of the postal service, the police service, the fire alarm, or any of the departments maintained for the general good is not demonstrated simply by the number of times that they are utilized every day, but by their certainty of operation when needed. Modern business methods require associations among the bosses, and this requirement, unfortunately, requires the organization of employes into a protective union to guard against the excesses of capital.



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CHAPTER XI.



CARPENTERS, MASONS AND ROOFERS.

ABORIGINAL carpentry was the chief trade of the predecessors of whitemen in America. The Indians and the Mound Builders were fair woodworkers. You will see even now some very pretty joining done by Sioux Indians. Their tent poles make a fit which many a white carpenter would not like to try to better. The best carpenters, of course, were the Aztecs, who had arrived at quite a high stage of art, and whose tools, although they knew nothing of steel, are really excellent. We have a few of their tools at the Smithsonian, but the best collection is, of course, in the City of Mexico. The material used was almost wholly glass, especially for the finer parts of their wood cutting. To chop trees they used flint axes, and for rough hewing out of logs the same; but when it came to the accurate fitting in of the hewn timber, they handled glass knives, chisels and saws very deftly and with beautiful results. There is a wooden post in Washington with hieroglyphics and faces cut upon it, all with glass. You can see bits of the original chisel still sticking in a corner of the wood, where it broke off, three centuries ago, under the hand of the workman. The Aztecs knew well how to make a very good and manageable glass, and their best cutting blades, swords, daggers and spears, saws, chisels and axes, were made of it. When the edge dulled, they broke it from the end instead of sharpening it, and got a new cutting line. You can see a great deal of aboriginal carpentry still in use among the Moqui Indians of the United States. Of course they use white tools now, but they follow out their old patterns. They know how to make ladders, and they swing their doors on hinges from the top, and they know how to mortise timbers—knew how long before Columbus landed in America. The chisels they push rather than hammer, work the board up and down on a fixed saw rather than the saw on the board, and withal they get creditable results. The frame work in the Pueblos is quite as honest as anything found in the United States. Throughout Alabama and Mississippi the Indians learned a few of the methods of De Soto's carpenters, but in 1699 when the French took possession of the Gulf coast and the Lower Mississippi, the savages appeared to have forgotten the art of building as practiced after De Soto's travels.

In the history of pioneer buildings the coming of the regular carpenter to take the place of the log-cabin builder is noticed. What part was taken by Anson H. Taylor and his brother, Charles, in the buildings of 1832 has never been definitely settled, beyond the fact

that, in the year named, they built a foot-bridge over the south branch, near the line of Lake street. They aimed to be men of all work, though Anson H. was a tailor, and Charles a tavern keeper. Madore Beaubien built a two-room log house on the southwest corner of South Water and Dearborn streets, in 1831, which showed in its interior a good attempt at carpentry. In 1833, however, must be credited the advent of the carpenter. In June, of that year, Augustine D. Taylor arrived, and before the close of the year he was joined by Maurice Baumgarten, Joseph Meeker and Matthias Schmidt—all carpenters.

The pioneer of all the carpenters and builders of Chicago died at 398 West Taylor street, March 31, 1891, in his ninety-fifth year. Augustine Deodat Taylor was born April 28, 1796, at Hartford, Conn. After receiving an education in the public and private schools of Hartford he was apprenticed to the trade of his father, that of carpenter and builder. In 1813 his father was killed by falling from a building, and young Augustine became the head of the family. In 1814 he was drafted and served three months in the Hartford artillery in New London and Saybrook. Mr. Taylor was married to Mary Gillett on June 7, 1817, and the next year he went to Fayetteville, N. C. In 1819-20 he lived in Wilmington, N. C., and then went back to Hartford, where he remained until 1833, when he came to Chicago. Upon arriving here he lodged in a loft on South Water street. He then moved to Lake street and then to Desplaines street. In 1860 he removed to the house at 398 West Taylor street, in which he resided up to the time of his death. Mr. Taylor, originally a Presbyterian, was converted to Catholicism by Bishop Cheverus, the first Catholic bishop of Boston. His first wife died in 1844, and in 1845 he was married to Mary Grovan, who died in 1879. By the first marriage he had five children, but one of whom is living—Lewis D. Taylor. By his second wife he had ten children, three of whom are living. Immediately after his arrival the question of erecting the pioneer church building of the city was discussed, and the work was assigned to him. St. Mary's church completed satisfactorily, building after building was erected by him. He did the carpenter work on the new brick St. Mary's church, the first cathedral in Chicago, standing near the corner of Wabash avenue and Madison street. In 1837 he built St. James' Episcopal church, and in 1846 he built St. Patrick's, St. Peter's and St. Joseph's, the first on the west side for the Irish Catholics, the others on the south and north sides respectively for the German Catholics. In the fall of the same year he erected a Presbyterian church in Naperville, Ill., which was the last church he built. After that time Mr. Taylor occupied himself with his regular trade, accumulating property and filling such municipal offices as he was called upon to fill. He was one of the original trustees of the town of Chicago, was an alderman two years and was city collector and county assessor.

Fernando Jones, who came to the city in 1835, made the following statement on the day of the pioneer's death: "When I arrived in Chicago in 1835 he had been living here two years. He lived in a modest dwelling at Wolf's Point on the western bank of the Chicago river, near where the present Lake street bridge stands. Whenever the construction of a church was contemplated he was consulted, as he had already acquired a reputation as a church builder. He was a plain, unpretentious citizen, in whom the residents, in those days,

placed a great deal of confidence. In the evenings he would visit the taverns where the citizens were accustomed to congregate, but, unlike many of the leading men of those days, would never go on a spree. He was a convert to Catholicism from Presbyterianism, and frequently spoke of the indignities to which he had been subjected by some of his acquaintances on account of his change of faith. He was always in comfortable circumstances and was imbued with the spirit of the times in regard to hospitality. Whatever was required of him to do was done well, and there was no one who doubted his honesty. He was one of those characters who made Chicago inhabitable at a time when her attractions were few. He was a friend to all and a trustworthy public servant."

The following were the carpenters of 1839: William Adams,* not here in 1843; J. M. Adsit,† 108 Monroe; Daniel Allen; Robert Allison,* Pine near Michigan; J. M. Arnold,† Madison street, died in 1855; Bennett Bailey,*† died November 7, 1881; Joseph Bailey; Hamilton Barnes,† Madison west of Clark; Charles and Chris. Baumgarten,† Randolph near La Salle, Charles died in 1882; Maurice Baumgarten,† teamster ten years later, North Dearborn and Wolcott, died in 1858; C. H. Berkinbile; Francis Berry; Joseph Blanchard, wagon-maker, 1849; Charles Bliss,*† State south of Congress; Charles Bliss,*† State south of Congress; Charles T. Boggs,*† State near Van Buren; William Boylan,*† Van Buren, west of Clark; J. B. Bridges,*† West Lake, died in 1887; Michael Brock,† 211 Lake; James and William Brooks; Joseph E. Brown,† 254 Clark, died in 1879; John H. Butler,*† Clark near Harrison; Alvin Calhoun,† 74 Randolph, died in 1849; James Campbell,* William Carling; C. Charleston,*† the fort carpenter; M. Choulet,*† Dearborn street; Thomas Clifford; John Cruver*† & Senser, North Clark street; John Daly,† North Water near Dearborn; Sivert Davidson, Cass street, Dutch settlement; Lewis and Usel Dodge,† later now at Niles, Mich.; David Dunham, North Water near Clark; Hugh Dunlop,† died 1873; Francis Edwards;† William Frank; Robert Freeman; Samuel Fullagher; Edward W. Gavin,† Cass near Kinzie; William Gillenger; Amos Grannis,† Edina place; David R. Gregg,† North Water near Kinzie; Samuel Greer,† North Water near Franklin; M. Haffey,*† died 1884; Polemus Draper Hamilton,† 126 Clark; Thomas E. Hamilton,*† 164 Madison; Jacob Harris,*† died 1877; John Harrison,*† Hugh K. Henry,* Auronah Hill; Isaae Holmes; John Johnston,† near Jackson and State; Sanford Johnston,† died in 1873; James Kane; James Keith; Darius Knight,† died in 1882; George and Thomas Landon; Cannte Lawson, street carpenter; Joseph Legg, south of Lake street, on west bank of South Branch; Sylvester Lind;† Sven Lothe; Alex. Lloyd,*† died in 1871; Cyrus Mann; Ira Mittimore,† died in 1879; Joe Meeker,† 165 Clark, died in 1872; Peter Dominique Mevelle,*† died in 1884; Joe, Mark and William Mitchell,*† Ezekiel and J. M. Morrison,* died in 1868, 123 to 131 Clark street; Brakey Orr, Cass street, near Huron; M. O'Neill, Dearborn, near Kinzie; Samuel Parry;† Azel Peek,† died in 1849; Samuel Perry; Samuel Resique; George Roberts; D. O. Robinson; James Robinson; John C. Rue,*† 156 Clark; John Scott;† John W. Sensor,*† died in 1885; Stephen Sexton,*† died in 1861; Robert Shepherd;† Bradner Smith; John Sollitt,*† John Spaulding; Thomas Spencer;

†Here in 1843 also. *Here in 1849 also.

Abram Storms; John Sweeney;*† Basil Tastaven; A. Deodat Taylor,*† died in 1891; William Thirds,† died in 1870; William Thomas; Dr. Robiinson Tripp,*† 119 Clark; Theodore Twitehell; Peter L. Updike,*† died in 1850; Andrew McClure; Jesse R. Van Osdel,*† died in 1887; William C. Van Osdel,*† died in 1867; John M. Van Osdel,*† residing here; Spencer Warner,*† 201 Wabash, died in 1882; Charles Watkins; Benjamin Waters,† died in 1881; H. Webster† & Boggs, State and Van Buren; C. Weseneraft,† died in 1855; O. L. Wheelock; George White; William Wiggins.*†

The earpenters of 1843, other than those who were here in 1839, as denoted in the list of that year, were: James F. Allen, Illinois between Pine and Sand streets; Addison Ballard, William Barker, Augustine S. Bates, killed by Indians, November, 1851, *en route* to California; E. D. Bates, Randolph and Wells; Henry B. Bay, died in Mareh, 1860; William E. Belden, 10 Water street, between Canal and Clinton; James Bening, Wolcot street, north of Kenzie; George Biekerdike, Canal, south of Adams, died in 1880; John Blakeley, alley, between Clark and La Salle; Daniel Booth, Jefferson and Washington; Samuel Boynton, 147 West Kinzie, died in 1882; Elijah Brewster, Jefferson street; Amos W. Burdick, Randolph, near Franklin; Ed. Burling;* William Butterfield, Clark street; Matthew Callahan; Abel Campbell; James Carson, State street; Elan Case, with Seoville & Gates; James H. Cassiday, North Dearborn; M. Cavanaugh, State street; Marvin Chappell, died in 1849; David W. Christian, Christy* & Dunham, North Water near Kinzie; Elisha Clark, West Water north of Madison, died in 1853; John Clifford, North Water, west of Clark; Isaae Coburn, Dearborn street; John Covey; John R. Daly; Francis Deinbaek, Dutch settlement; William Dixon, North Dearborn, died in 1867; William E. Doyle, Indiana street, west of Dearborn; John Duffy, Market, south of Washington; John Edwards; J. W. Emmons,* with Robiinson Tripp; R. R. Falley, South Canal; John A. Field,* Madison and Halsted; Joseph B. Field, died in 1848; James Fish and J. P. Fish, Kinzie, east of Rush; George Fletcher; Chris. Ford; Henry L. Fulton; John Gates; Alex. Gillis; Peter Graff; Samuel B. Haggard; William Harper; Thomas Holt, died in 1881; Peter M. Johnson, died in 1884; Johnson & Co.,* Dearborn south of Randolph; John Jones, south of Jackson, east of Clark; M. Keefe,* died in September, 1850; Elisha B. Lane,* died in 1884; William L. Lawrence, La Salle, near Randolph; C. B. Leavitt,* Kinzie, near Cass; A. Leffingwell; M. Loekhart; James Love;* M. McDonnough,* near Clark and North Water; A. McMillen; Robert Maleom;* Ole Markesen, Dutch settlement; Samuel Mayo; Enos L. Mead; Patrick Miles; John Malloy; Orsemus Morrison; Geo. W. Noble, died in 1885; James Norris; James Patten; Moses G. Pratt; William Reed; Henry Rhines, died in 1852; Josiah Saekett Root, died in 1884; Matthias Schmidt,* Duteh settlement; Israel Seaton; Joseph Shaw; William Smale;* William Schmidt;* Samuel Spook; C. Spaulding; John Stoekton; T. R. Stubbs; B. R. Sturges; L. W. Thompson;* L. H. Todd; E. B. Vanvlaek; William Waldie; Ed. Q. Wallaee; Samuel M. Warner; Alanson Watson,* died in 1879; Thomas Webster; Elisha Wells; Cyrus S. Wilcox, died in 1890; Erastus Wilcox, died in 1890; Joseph Wild; John C. Wilson; James Wood; P. R. Wright and Hugh Young.

†Here in 1843. * Here in 1849.

The carpenters of 1849, whose names are not given in the lists of 1839 or 1843, were A. Alexander, William Allers (rear of 191 Randolph), Jabez Amidon, C. Andrews, W. Armstrong, Jacob Arend, T. Arnous, John and Tobias Atzell, M. Babcock, W. Baker, J. Ballou, Mark Barnes, Peter H. Barringer, George Bassett, John H. Bates, Fred Battles, Charles Beckert, Tim. Beckwith, William Belden, Nick Bell, C. Berg, V. Bernes, John Biddle, M. and F. Bishop, H. Bolsker, N. Bond, I. Boon, George Bosch, Moses Boynton, Fred Brandart, Magnus Branell, M. Brosnan, William Brearley, M. Brothers, Peter Brown, William Brown, Tom Burkey, John Burns, Albert Busch, William Butchert, James A. Butler, S. A. Call, M. and Hiran Campbell, John Carrean, Sam Carson, F. A. Carver, John Castle, W. Centre, H. Chadwick, S. Chandler, A. Chaussee, Stephen Cherry, W. D. Christian, James Christie, Rumsey Christie, H. Cilsmeir, C. W. Clark, Horace Clark, J. B. Clay, Rev. H. Whitehead, J. B. Clemens, Peter Cochran, M. Coleman, I. W. Comstock, Julius S. Cook, Ira Corwin, Elon Crane, William Craven, M. Cromer, N. Cumberland, John Davis, George Delmadder, James De Puy, Stephen Derr, George Dunning, James and J. W. Drake, Richard Duff, A. H. Duffur, John Dunlap, William Dunn, William Dusman, John Dwyer, M. H. De Wolf, C. M. Edwards, Joseph Elsworth, Bernard Farwick, Patrick Flynn, Thomas Foley, Benjamin Folsom, John Fordman, Tom Freeman, Robert Gairns, Tom Gale, Gott. Gangeiser, G. W. Gardner, Edward Gavin, Joe Gealer, Henri Geradt, F. Gibbons, Edward Gleeson, Edward Goldie, Joseph Goodman, James Goodwille, Nathaniel Goold, Michael Gordon, A. and B. Graft, Jim Graham, W. W. Grant, Morris Gray, W. Gray, James Haines, Henry Halve, Michael Hambrech, Tom Hampton, M. Hanlon, John Hanley, Dorastus Harper, Justin and William Harper, John and Joseph Harris, — Hartwig, William Harvey, Hiram Hastings, Jr., Jonas Haynes, Patrick Heraghtry, I. and J. Helfritz, George F. Helmbold, W. Henry, John Herman, Sivots Hermes, Bernard Hillis, H. C. Hinebaugh, Patrick Hogan, Frank Holland, Dan and Sam Hughes, H. S. Hulin, J. S. Hunt, G. H. Huntington, James Hutchinson, J. Ingham, A. Jager, Edward Jennings, W. S. James, B. W. and F. Johnson, J. C. Johnson, I. A. Jones, Joseph Keil, Andrew Keith, Val. Keller, M. Kelly, Sam Keyport, Ed. Kiernan, Elias Kimball, William Kimes, Charles Koppes, B. and E. Krafft, J. B. Lauguiche, Dan Lander, Ira W. Landon, John Lang, J. R. Langdon, John Lattimer, William Lawley, C. Lebau, Jacob Lengster, Henry Letterer, Evan Lewis, Fred Lewison, Louis Lewson, M. Limbeck, Joseph Liness, William Loft, Harrison Lowe, Henry Macaulay, Jim McBien, Charles and J. McCally, Charles McCarthy, Sam McDearman, Peter McDuff, William McFarlan, Ed. McGrath, M. McKeon, Thomas Madden, John Maher, Thomas Martin, M. H. Marsh, John Marlet, Phil. Martin, William Mason, Henry Mauk, James Maxwell, S. A. Metcalfe, Michael Mickelson, Joseph Mier, James Millard, Michael Miller, H. B. Mills, T. H. Montague, Dennis Morris, C. Mulford, Francis Murphy, Christian Nelson, Julius Newman, James and John Nolan, John Nolan, Jr., George Noll, Dennis O'Brien, John O'Hara, M. O'Neill, Thomas O'Neill, P. O'Rourke, K. Olsen, Olse Olsen, Abram Ommonsens, Richard Peck, James Pett, John Phelan, Ben Pillsbury, Wesley Pitkin, John Picton, John Porter, Henry Powell, J. W. Preston, John Quinn, Ellis Radin, William Rawson, Jedediah Raymond, Henry Red-

bert, Ed. Redsell, William Reed, Ira Reynolds, Henry Rickey, Ed. Robbins, John Robertson, Wilber and William Robinson, J. H. Rockwell, Charles Root, H. Roothrof, R. C. Ross, O. Rouilliard, R. J. Rowley, J. Schrider, Henry Schulte, D. W. Sherman, A. C. Sherwood, David Shields, Sam Shook, W. K. Silcox, Abram Simpson, John Skerrit, William Slec, Sam Smale, A. Smith, Thomas Smith, William C. Smith, Wright Smith, Martin Snooks, John Soargel; John Steffens, Fred Stein, Aug. Steinhouse, Charles H. Stone, M. Story, Joseph Stradt, David Swink, Joseph Taylor, William Tennant, Alex. Thom, John Thomas, Richard Thompson, William Thompson, E. Tibbitts, Thomas Tipping, John Trainer, D. Turbush, O. Valliant, Hiram Vanzwoll, Henry Vreeland, W. H. Wochter, John Wadsworth, William Waildee, J. S. and R. F. Watson, M. S. Webber, Charles F. Webster, Thomas Whelan, Martin Whelan, John Wheeling, S. D. Whisner, James Wright, Thomas White, L. C. Whitmarsh, William Whitney, George Whittaker, John Wilcox, D. K. Williams, James Williams, John Wilmoth, L. Woodard, Stephen Yancy and P. A. Young.

The extraordinary stories told about the Garden City by the delegates to the River and Harbor convention and the advice given the eastern young men by Horace Greeley, one of the delegates, filled Chicago with carpenters in 1848-9. Notwithstanding the town's extraordinary capacity for labor, even at that time, many of the new comers could not obtain steady work, so that they scattered throughout the great West, leaving only a few of their number to grow up with the city. For this reason the list of carpenters and builders of 1859 shows a new set of names.

The carpenters and builders of 1859 were William Arend, 102 Indiana street; William Armstrong, 12 Cass street; Bailey & McClure, 90 Monroe; Baker & McEwen, Wells and Pier-son; A. H. Beese, 221 Milwaukee avenue; Begole & Taylor, 120 Illinois; J. W. Bent, Throop near Madison; Boggs & Son, Polk and Sherman; Boyington & McWilliams, 170 Adams street; Moses Boynton, 135 W. Kinzie; John Brown, 178 W. Randolph; Brown & Adams, 289 State; George Burrows, 34 W. Washington; Peter Button, 390 W. Van Buren; Arch. Campbell, 99 Quincy; Allen Clark, Madison near Ann street; C. H. and D. W. Clark, 85 State; Cleveland & Russell, 74 and 76 Fulton; A. F. Colton, Illinois and Wolcott; Adam Conrad, Clark near Division; Charles Cook, Taylor and Canal; Charles E. Cook, Taylor and Clinton; H. C. W. Cowdery, 364 Halsted; Augustine Cudmore, Granger near Wells; William Dickson, 76 N. Dearborn; Elwood Ewing, Fulton and Union; Chris. Feilin, Church near Wolcott; Isaac Francis, Desplaines and Wayman; Xavier Fricke, 171 W. Lake; Fries & Marwedell, 146 Ontario; Gardner & West, 91 Adams; C. Gebhardt, La Salle near Division; Gillis & Ritchie, 70 W. Washington; Thomas Goodjohn, 17 Ann street; Amos Grannis, 154 Edina place; Charles W. Gray, 1 W. Randolph; Richard Griffith, 129 Franklin; Gunter & Donlin, La Salle and Illinois; P. D. Hamilton, 60 Edina place; Ben F. Harriett, May and Lake; Jacob Harris, 101 Adams; Joseph Harris, Pierson near Desplaines; J. B. Harshaw, 446 State; Alex. Heald, 395 W. Adams; P. C. Healy, Halsted and Carroll; Heeney & Campbell, 99 Quincy; Henry F. Hern, 278 Clark; T. Holland, Griswold near Van Buren; Thomas Hopewell, 144 Ontario; Henry Hoskin, 175 W. Randolph; George Huhn, 388 Taylor; Will-

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Thomas Clark

iam Johnston, State and Adams; Johnson & Co., 174 S. Green; Val. Keller, Harrison and Wells; Landon & Adams, 90 Pierson; Patrick Lawless, 100 W. Polk; Thomas Lentry, 206 N. Morgan; F. Leibrich, 417 S. Clark; H. Lumbard, 44 N. Green; Ben Lynds, 227 State; James McDonald, Erie near Sedgwick; James McDonnell, Superior near Clark; A. McDougall & Sons, 106 Carroll; John McKee, 150 Sherman; M. McLaughlin, 63 W. Madison; John McWhiney, Archer near Stewart avenue; Maginness & Ellis, 16 S. Wells; A. Mason, northeast corner Congress and State; B. D. Mead, State near Old; G. P. Merwin, Dearborn near Madison; Moody & Bro., 295 Edina place; Charles Nelson, 364 S. Clark; W. S. Nelson, 144 Desplaines; O'Neil & Fitzpatrick, Lake near Paulina; A. Selslegle, Clark near Cross; George Olsen, Peoria and Milwaukee; H. T. Pitt, State southwest corner Commerce; Poiner & Boyce, 285 Edina place; Jacob Powell, 71 W. Randolph; William Porter, 63 Pearson; M. Randolph, May near Fulton; M. E. Reynolds, Calhoun place near Dearborn; J. C. Rue, 158 S. Clark (rear); V. E. Ruseo, Griswold near Taylor; Jacob Schimmels, Halsted near Mitchell; Schmid & Katz, Griswold near Van Buren; Fred Schmidt, Newberry near Maxwell; William Schriener, Archer near South; Charles Schurz, 119 N. La Salle; Sam Simons, 366 W. Randolph; Smith & Bro., Griswold near Van Buren; Samuel Smale, 47 W. Adams; H. & N. Soerter, 84 W. Van Buren; Thomas Soper, 75 Throop; Thomas Sopers, Van Buren near Clinton; John Stuckes, Wayman near Halsted; Augustine D. Taylor, 211 Desplaines; Tobin & Bro., southeast corner Desplaines and School; John Trautwein, South street near Wentworth; Ure & Randolph, May near Fulton; William Veitz, 124 Wells; A. Watson, 178 S. Clinton; M. S. Weber, 300 Chicago avenue; E. & L. M. Weeks, 416 State; W. & C. W. Wells, 133 W. Madison; A. H. Wiedhofft, 210 Michigan; Nicholas Wise, corner Clark and New; John C. Youngman, 86½ W. Madison.

The leading carpenters and builders of 1869 were Allen & Bartlett, A. H. Beese, A. H. Briggs, F. Burgen, J. Clark & Brother, Hennessy & Brother, John Middleton, Edward Murphy, Fred Roe and Wartman & Brother. The name of James S. Taylor appears as a fence and sidewalk builder, and that of J. R. Brown as manager of the American Fence Company, A large number of the representative tradesmen named in the former lists still resided here, and many of them were employers of labor, in fact.

The building contractors of 1871-2 were Agnew & McDermott, J. S. Bast, H. M. Chapman, R. Cleveland, Colwell, Clark & Co., Charles E. Cook, J. B. & W. C. Corlies, Cowdery & Cleveland, Crawford & Johnson, C. W. Edson, Fireproof Building Company, Fowler & Carr, Gladding & Howard, D. Goodman & Co., D. Goodwillie, Grant, Rice & Herder, James Ingram, Charles O. Lake, Lewis & Co., Alban T. B. Lynch, McDougal & McKinley, Andrew Miller, Moore & Devoe, G. A. Morehouse, Mortimer & Tapper, Moss, Chambers & McBean; F. Page, 54 West Pearson; Pierce & Pope, 133 La Salle; C. & A. Price, E. & A. Price, and Price & Cook, Exchange building; Prussing & Muller, 133 La Salle; W. T. Richardson, 843 State; John Sindelbach, 118 Eleventh street; Smith & Johnson, 146 Green; Hugh Somers, 351 North Franklin; Jeremiah Sullivan, La Salle and Monroe; Joseph Taylor, Exchange building; B. A. Vail, 603 Wabash; Voice, Robinson & Co., 367 Sedgwick; Walker & Kelton, 240 Madison;

S. Watkins & Co., 133 La Salle; George F. Whitney, 54 South Peoria; D. S. Whittenhall, 242 Randolph; W. Woodruff & Son, 165 Adams street.

The carpenters and builders of 1879 were James B. Allen, Swante Andersen, Jacob Ahrens, G. A. Arnold & Co., Bailey & Son, Bargerbush & Leslie, Paul Baril, John Bartel, H. T. Beebe, John S. Bement, William Bishop & Co., James Boyce, Branstad & Stephenson, Briggs Bros., W. Briggs, James Brown, Frederick Brummel, Burnham & Gibbs, D. Cameron, George Carpenter, Thos. Carrick, Rufus Carter, C. C. Chandler, Allen Clark, Geo. F. Clark, Jonathan Clark, Clark & Jackson, J. S. Corl, Jno. Coumbe, Laurence Craney, Theo. Darche, Tim J. D'Arcy, I. Davies, Geo. B. Davis, Henry Dettmer, Ed. F. DeWalsh, Louis Dodge, Michael Doherty, John H. Donlin, Edbrooke & Ewing, F. J. Fairhead, Geo. Fix, John Fletcher, William Ford, Cornelius Ford, Foster & Young, John Galvin, Adolph Gichon, Henry Gilsdorf, Thomas Glody, David Goodman, Joseph Goodman, William Grace, Nathan B. Gray, Benjamin Green, J. W. Griest, Frank Griggs, Ole Guleker, Thomas Gunigan, M. & G. H. Harris, Thomas Hart, Urial K. Hart, Heath Bros., Hennessy Bros., Hettler & Getchell, W. H. Hiestand, G. W. Hoyt, H. L. Hull, Peter J. Hurter, William Hyink, Ed. Iverson, Jack & Carpenter, Albert John, John Johnson, James Jones, John Jones, Jones & Williams, Robert W. Jordan, Andrew Katz, Peter Kauff, William Kerr, H. Kirchoff, Philip Krempel, C. Kretschmar, Sam T. Lawrence, George J. Lobstein, William Lumley, George Macaulay, Maher & Robertson, Peter Mason, William Mayor, Anthony McCormick, McDonald & Blondin, John McEwen, William McKay, McLean & Falkner, R. A. McPherson, John Middleton, William and W. B. Montgomery, Edmund Moore, R. B. Moore, William Morley, Daniel T. Mulvey, Thomas A. Neany, O. Nelson, Paul Nelson, Charles and George Nealy, Eric Olson, O'Neill Bros., William Palmer, Andrew J. Park, Joseph Pavey, Henry and Richard Peters, G. L. Petersen, C. C. Pierce, J. E. and R. Porter, A. J. Preble, Joseph H. Radcliffe, Robert Rae, John W. Reid, F. D. Reynolds, F. Ritschle, H. H. Roberts, August Rosa, Russ & McGuire, Henry Schaller, Frederick Schuder, Senyard & Vaughan, Sam Champier, Charles Shaw, J. J. Sherman, J. H. Sinclair, Joseph Skerritt, Smith & Sullivan, William Sprenger, Stigleman & Co., John T. Striker, M. B. & T. R. Swezey, Joseph Taylor, Joseph A. Train, O. R. Thompson, Isaac Tomlinson, J. F. Tregay, G. & J. Turnbull, Van Dyke & McCarroll, Visser & Mueller, George Wimmer, John Voss, A. H. Weidhofft, M. A. Wakefield, Weeks & Lacey, William Winn, Henry White, Whitlock & Baker, H. A. Whitney & Bro., D. B. Woodbury, John W. Woodard.

The organization of carpenters and builders who were employers of labor was mooted from time to time, from 1882, when the great building era commenced, to 1886, when an organization was effected. The growing power of labor and the oft-repeated assaults on the privileges of the employer led to this result, and further, to the adoption of a platform which appeared, even to the opposition, to be equitable in every feature, although terribly independent in phraseology. That platform, which to-day is the guiding star of the association and forms a part of the records of the association, is as follows:

"We affirm that absolute personal independence of the individual to work or not to work, to employ or not to employ, is a fundamental principal which should never be questioned or assailed; that upon it depends the security of our whole social fabric and business prosperity, and that employers and workmen

should be equally interested in its defense and preservation. We recognize that there are many opportunities for good in associations of workmen, and while condemning and opposing improper action upon their part, we will aid and assist them in all just and honorable purposes; that while upon fundamental principles it would be useless to confer or arbitrate, there are still many points upon which conferences and arbitrations are perfectly right and proper, and that upon such points it is a manifest duty to take advantage of the opportunities afforded by associations to confer together to the end that strikes, lockouts and other disturbances may be prevented; that the laws of the state shall prevail in regard to apprentices, and not the dictates of labor organizations; that stewards in control of the men employed at buildings will not be recognized, and that foremen, as the agents of employers, shall not be under the control of union while serving in that capacity."

The first meeting of contracting carpenters and manufacturers, to organize an association, was held at the Grand Pacific hotel, March 20, 1886. W. I. Clark presided and William Grace explained the objects of the meeting. A committee was appointed to report a constitution, and a call for a second meeting on March 27th was signed by the W. E. Frost Manufacturing Company, Hearson & Payne, William Jackson, N. Gilsdorf, William Mavor, Steinmetz & Ellenberger, Ira A. Heath, William Grace, James Wood, Thomas Clark & Sons, Woodard & Reese, F. D. Reynolds, Carsley & East Manufacturing Company, E. P. Wilce & Co., Peter Kauf, J. L. Deitz & Co. and Charles Carpenter. At the second meeting W. E. Frost presided, with R. C. McLean, secretary. Chairman Hearson, of the committee on constitution, reported the constitution was adopted, and the roll was signed by fifty members, although organization was not completed until March 30, when thirty-eight members paid the initiation fee, and the following named officers were elected: William E. Frost, president; William Hearson, vice president; Walter T. Clark, secretary; Peter Kauff, treasurer; C. G. Dixon, William Grace, William Mavor, directors to serve two years; Ira A. Heath, Peter Welter, Murdock Campbell, directors to serve one year.

The first meeting after organization was held in the Permanent Exhibit assemblyroom, April 10, 1886, when a communication from the secretary of the United Carpenters, asking consideration for the eight-hour day question, was read. A committee to meet the United Carpenters was appointed, the members being William Grace, J. A. Meyer and S. H. Dempsey. Ten days after, this committee reported the willingness of the association to adopt the eight-hour day, the matter of wages being omitted. In May the carpenters suggested the consideration of wages; but members of the association seemed disposed to ignore the eight-hour day altogether, and on May 26th a resolution to restore the ten-hour day was carried, in the face of a deputation from the North Side Master Carpenters' association, representing fifty members, who were in favor of the continuance of the eight-hour day. By June 15, all contractors who were not pledged to the eight-hour day, had signed the masters' contract agreeing to the eight-hour day, and several independent employers agreed to return to the old-time schedule. In January, 1887, the annual election of officers took place, with the following result: William Grace, president; William Hearson, vice president; F. C. Schoenthaler, secretary; Peter Kauff, treasurer; C. G. Dixon, W. E. Frost and William Mavor, directors to serve one year; J. Rameke, J. W. Cassell and J. W. Woodard, directors to serve two years. In March J. W. Andrews was appointed secretary, vice Clark resigned.

In April, 1887, the motion of Woodard, to allow journeymen thirty cents per hour as a

minimum, and grade it upward was adopted. Later that month the carpenters demanded thirty-five cents per hour for eight hours' work and recognition of their union; but the demand was received coldly by the contractors, and a notice was ordered to be published in the daily papers informing carpenters who wished to work at the rate decided upon to be at their respective buildings, where they would be protected. A few days later, a thirty-cent rate and an eight-hour day were adopted, followed by a declaration of rights. On May 14, seventy-five new members were elected, out of eighty-eight applicants for membership; the code of principles adopted by the building trades was made part of the record, and also the working rules, providing for a nine-hour day and payment by the hour. The investigation into the action of Contractor Fitzpatrick, acting independently of the association and employing men for longer hours and at higher wages than countenanced by the association, resulted in an apology, and in bringing to light the following notice, by John E. Burton, of Nebraska: "I will expect and require from you the full completion of my building, northwest corner of Van Buren and Clinton streets, Chicago, on or before the first day of October next, and shall hold you responsible for all delays, whether caused by strikes or non-delivery of material, and shall expect of you and your bonds the full amount of one hundred dollars per day for each and every day the completion of said building is delayed after October 1st."

On July 14, 1887, the lock-out was reported at an end, and the appointment of joint arbitration committees gave promise that disagreements in the future could be settled without resort to strikes or lock-outs. On July 23, the United Carpenters' council presented nine demands, viz.: The establishment of a uniform day; of a minimum rate of wages; of a minimum rate of wages for overtime; of a minimum rate of wages for Sunday work; for the re-establishment of the apprenticeship question; for the definition of the foreman's position; for the recognition of a right to refuse to work with non-union men; for the adoption of a code of working rules, and for the settlement of all other differences between employer and employe. The only recognition accorded to all these demands was the adoption of Mavor's resolution, permitting members to work the number of men per day that will best suit their interests for the balance of the year. In September, 1887, the association purchased two hundred copies of Beek's history of the lock-out. In October a committee was appointed to confer with one of the Western Architects association, on the adoption of the "universal contract."

The annual meeting of 1888 was held on January 12, but the election was postponed to January 26, when the following-named officers were chosen: William Hearson, president; J. W. Woodard, vice president; James John, secretary; Peter Kauff, treasurer; J. Ramcke, J. W. Cassell and William Goldie, directors for one year; William Mavor, S. H. Dempsey and William E. Frost, directors for two years.

The work of the association for 1888 may be said to have been without incident, and during the last half of the year no business was transacted.

The elections of 1889 resulted as follows: William Goldie, president; O. Sollitt, vice president; James John, secretary; Peter Kauff, treasurer; William Mavor, S. H. Dempsey

and W. E. Frost, directors for one year; William Hearson, J. W. Cassell and F. Blair, directors for two years.

The amendment of the by-laws and the consideration of the proposed lien law occupied the attention of members. In March, Section 35 of the proposed lien law met with stern opposition, and William Goldie, W. E. Frost, and C. Steinmetz were appointed a committee to act with committees from other building trades in opposition to it.

The annual meeting of 1890 was held on January 9, and the following-named officials were elected: William Goldie, president; J. W. Cassell, vice president; James John, secretary; Peter Kauff, treasurer; William Mavor, W. I. Clark and F. Blair, directors for one year; J. T. Tregay, J. W. Andrews and O. Sollitt, directors for two years.

Seven days later Mr. Prussing addressed the association on the origin of the agitation for the abolition of the lien law, and read the paper which he subsequently delivered before the National Association of Builders. His views on the subject were concurred in by the carpenters and builders. An instruction to the delegate to the national convention to vote in favor of an eight-hour day was given and the adoption of the uniform contract favored. The Mavor resolutions, providing for an eight-hour day, a maximum rate of thirty-five cents, and payment by the hour, were adopted March 13, 1890. In April the existence of a strike did not scare the association, for on the 10th a resolution not to recognize the union prevailed. In May the contract between the Carpenters' council and the new Boss Carpenters' association was interdicted by the carpenters and builders, and in June the notion of the union carpenters to control the world's fair building was combatted.

In June the association may be said to have been committed to the employment of non-union men. The report of the committee on the employment of labor showed that 3,456 carpenters had been provided with work since the beginning of the strike, and that the demand of contractors for workmen was fairly well satisfied. A reward of \$500 was offered July 24 for the conviction of the persons who damaged the new buildings at 1051 Monroe street and at Monroe and Homan avenue. On August 7, 1890, reports reached the association that ninety-five workmen were clubbed and thirty-five new buildings raided by the strikers.

In September, 1890, the resignation of Secretary James John was received, and Charles S. Berry was appointed to fill the vacancy.

The first resolution of condolence of record, is that of December 29, 1890, on the death of F. H. Avers. At this time the report of the conference with the Carpenters' council on the term of work and rate of pay was made, and the outline of the present working rules was given.

The annual meeting of January, 1891, was attended by fifty-five members. The officers elected were William Goldie, president; F. Blair, vice president; W. I. Clark, secretary; C. S. Berry, corresponding secretary; J. F. Tregay, J. W. Andrews and O. Sollitt, directors for one year; W. F. Behel, George A. Fuller and Cesaire Garean, directors for two years. The work of the first three months of the year resulted in the adoption of the following articles of agreement and working rules—only four members opposing:

Articles of agreement made this 31st day of March, in the year of our Lord one thousand eight hundred and ninety-one, between the Carpenters & Builders' association of Chicago, county of Cook, and state of Illinois, by its committee on arbitration, Wilbur F. Behel, Francisco Blair, W. Irving Clark, William Mavor and John Ramcke, parties of the first part, and the United Carpenters' council, of the same place, by its committee on arbitration, J. G. Ogden, G. W. Blackford, J. B. Cogswell, J. H. McCune and R. Whimsett, parties of the second part. Witnesseth, that the said parties, for and in consideration of the following articles having been adopted by the joint committees on arbitration March 21, 1891, agree to adopt and make the same, so far as applicable, an additional article of their constitutions and agree that no regulations or by-laws to conflict therewith shall be passed. The joint committees on arbitration shall hear all evidence of complaints and grievances of a member or members of the other, or of one association against the other association, referred to it by the president of either association, and shall finally decide all questions so submitted and certify such decision to the respective associations. Work shall go on continuously, and all parties interested shall be governed by the award or decision rendered; provided, however, that work may be stopped by the joint order in writing of the presidents of the respective associations until the decision of the joint arbitration committees is obtained. That the joint committees on arbitration shall continue in office for the adjustment and enforcement of the rules incorporated in this agreement, for the term of two years, beginning April 13, 1891, and ending April 13, 1893, or until their successors are elected. And we further mutually agree that each association will, in the month of January, 1893, elect a standing committee, consisting of five members, to serve for the ensuing two years, or such period as the joint committees may agree upon, to establish a minimum rate of wages, and adjust all questions of interest to the respective associations. The following working rules to be enforced during the continuance of this contract, unless otherwise ordered by the joint committees:

ARTICLE 1. That the working day shall be eight hours, commencing at 8 A. M. and ending at 5 P. M.; but the noon hour may be curtailed by special agreement between the contractor or his representative, and a majority of the employees, though not in such a manner as to permit more than eight hours' work. But if two or more shifts of men are worked in one day, the same men shall not work on more than one shift, and such shifts will not be considered overtime.

ART. 2. That the pay shall be by the hour.

ART. 3. That the minimum rate of wages shall be thirty-five (35) cents per hour from April 13, 1891, to April 1, 1893, inclusive.

ART. 4. That overtime shall be rated as time and one-half, and Sunday time shall be rated as double time.

ART. 5. That all journeymen carpenters shall receive their pay as often as once in two weeks; but when a journeyman is discharged, he shall be paid on the day of his discharge or on demand at the office.

ART. 6. That the apprentice system shall be governed by the state law.

ART. 7. No member of the Carpenters & Builders' association shall, during the term of this contract, make a reduction in the rate of wages of a carpenter without giving him due notice previous to making said reduction. This article shall in no way be construed as conflicting with Article No. 3.

ART. 8. No member of the Carpenters & Builders' association shall sublet or piece out their carpenter work. Neither shall any journeyman who is a member of any association represented in the United Carpenters' council be permitted to take piece work in any shape or manner from any owner or contractor, whether he be a member of the Carpenters & Builders' association or not.

ART. 9. Any journeyman carpenter, being a member of any organization represented in the United Carpenters' council, may work for any person who does not pay less than the minimum rate of wages.

ART. 10. Any member of the Carpenters & Builders' association may, at his discretion, employ one helper to every five carpenters on each job, who shall be at liberty to use a saw, hammer and hatchet at any work on the job, and the rate of wages shall be as agreed between the employer and employee.

ART. 11. All apprentices now in the employ of any member of this association shall complete their apprenticeship with such member.

ART. 12. A complete list of all additions or alterations in the membership of either association shall be reported to the secretary of each association as often as once in every three months.

ART. 13. Any infraction of the provisions of this agreement by a member of either association party to this contract shall be reported to the chairman of the respective arbitration committees, and to

be by them investigated, and upon sufficient proof of the violation of any of the provisions of this contract, he or they shall be fined, the amount of fine to be determined by the joint committee. Upon non-payment of the fine, he or they shall be suspended from the association of which he or they are members; and it is further agreed that no employer shall again employ said journeyman carpenter while such fine remains unpaid; and no journeyman carpenter shall work for any employer who has been fined and the same remains unpaid.

WILBUR F. BEHEL,
FRANCISCO BLAIR,
W. IRVING CLARK,
WM. MAVOR,
JOHN RAMCKE,

Committee Carpenters & Builders' Association.

J. GILBERT OGDEN,
GEO. W. BLACKFORD,
J. B. COGSWELL,
J. H. McCUNE,
ROBERT WHIMSETT,

Committee United Carpenters' Council.

The *Inland Architect* is the official journal of this association and has been since its organization. There were one hundred and forty members in good standing (April 10, 1891). The annual dues are \$15.

The Boss Carpenters & Builders' association elected the following named officers in January, 1891: W. H. Weeks, president; James Smith and J. Barnhofen, vice presidents; J. M. McDermott, secretary and treasurer; A. Vanderpoel, sergeant-at-arms; Paul Mathison, J. W. Walker, James Smith, C. M. Bartlett, M. Brennan, members of the arbitration committee. The election of this committee was strongly opposed by many members, but the agreement between the new bosses and the Carpenters' union, required the existence of such a committee, and for this reason the members were chosen.

Many references to the pioneer masons of this city are made in the history of its houses. All are not named therein, and for this reason the names of the minority appear here with the majority. Prior to 1839, John Golden was a famous worker as a mason. His house on North Water street near La Salle was the objective point for many an owner who wished to build a foundation or a chimney. Peter Page was as popular as Golden. Alanson S. Sherman resided at the corner of Washington and Clinton streets; F. C. Sherman was his neighbor. Andrew Sparr resided on Rush street near Chicago avenue, Ashbel Steele was also here; J. M. Van Osdel was architect and builder, with house on State and Kinzie streets, and Alonzo C. Wood resided on Cass near Ohio streets. The first mention of a mason or bricklayer at Chicago, was made in 1833, when Major Handy filled the dual position.

The masons of 1843 were William Alverson; C. F. Apley, with A. S. Sherman; George Barnett, with W. Worthingham; George Bewsey; Jerry Briggs, south of Adams west of Clark; John Eells (bricklayer); Henry Frank; John Golden, North Water, near Clark; R. E. Heacock; Alex. Hamilton Heald, died 1885; Isaac Howe, bricklayer, died 1870; Samuel Howe, bricklayer, Clark street; Z. W. Hyde, mason, Illinois near Pine; William Johnson, mason, 220 Lake; Timothy Larkin, mason, Kinzie near Wells; J. I. Lawrence, mason; Ferd Lubke, mason; Patrick McCluskey, mason; David McCullough; James McGrath; Henry Miller, died in 1890; Peter Page, died in 1880; Richard Power; Abner Price, bricklayer; Cornelius Price and son, bricklayers; John Molloy Price, bricklayer; William Price, bricklayer, died in 1884; Thomas Ray, mason; Robert Reed, mason; Michael Rice, mason; Hiram Shepherd, mason; Thomas J. Shepherd, mason; Joseph Shoemaker; John Simpson, died in 1851; Andrew

Simpson, Andrew Sparr; Hugh Ward, died in 1859; James Ward, died in 1881; Alonzo C. Wood; William Worthingham, died at St. Paul, Minn.

The contractors of 1843 were: W. A. Baldwin, died December, 1890; John Beach, died in 1850; Ambrose Burnam, died in 1870; E. W. Herrick, died in 1866; I. N. Herrick, died in 1890; A. S. Sherman, survivor in 1891; Augustine D. Taylor, died in 1891; Benjamin Wilder, died in 1877.

The masons of 1849 were: William Anderson, A. Armitage, M. H. Baldwin, William Barker, James Barnett, William Barrick, Joseph Beers, Robert Bishop, James Bremner, W. D. Burns, T. Snodgrass, Edward Carney, William Carroll, Francis Clark, William Clark, John Conahan, Matthias Coster, John Daily, William Dickens, James Duffy, — Edwards, Joe Edwards, F. Feikhorn, George W. Fish, Ulick Fitzmaurice, — French, Peter Geib, Henry Geib, John Golden, Francis Green, Isaac Hadwen, William Hasket, A. H. Heald, D. J. Hitchcock, John W. Horton, Dave Howard, Peter Hugel, George Jordan, C. Keitemeyer, John Laesen, Thomas Leahy, Thomas Largin, Joseph F. Lawrence, John Leazer, Joseph Lapez, Ferdinand Loubicke, John Lundeek, Patrick McCue, William McDearman, James McGraw, Patrick McGraw, John McMahan, John Miller, William Mortimer, Martin Murphy, Charles O'Connor, Patrick O'Connor, Thomas Olesen, William Pettit, Antoine Poiter, Edward Price, William Price, John Rielly, Selah Rogers, Sebastian Rose, Joseph Scheidel, Richard Shippey, John Showers, John Simpson, Charles Sevan, Edward Thomas, M. Thomas, S. C. Wood, Thomas Thompson, Thornton Thompson, — Vogt, William Wilson, Daniel Walker, Samuel Walker, Hugh Ward, James Ward, John Ward, L. Waterhouse, Benjamin Wilder, John Williams, William Worthington.

The masons of 1859 were William Barker, 73 Buffalo; George Chambers Whitney, east of Green Bay; Thomas Courtney, William near Rucker; John J. Dietz, Monroe near Rucker; Joseph W. Hambleton, 412 West Jackson; John McDermott, Division near Clark; James McGraw, 132 West Adams; C. & J. McMillan, 177 West Adams; Mortimer & Loberg, Lynd's block; John F. Sendelback, 217 Blue Island; W. N. Stokes, 157 North Carpenter; Wallbaum & Beauman, Michigan and Franklin; Robert Turner, 346 State; James Ward, 254 West Randolph; Ezra Whiting, 93 Edina place.

John M. Dunphy established himself as building contractor in 1863, and twenty years later organized the firm of John M. Dunphy & Co. In 1866 P. J. Hurter established himself here. Among the principal buildings erected by him, prior to 1887, are St. Luke's hospital; the Ontario flats, corner State and Ontario streets; Catholic church, Lake View; residence of F. McVeigh, Lake Shore drive (considered one of the finest in the West); residence of L. Morganthau, Calumet avenue; R. J. Taylor's three houses on Ellis avenue, and the following high-class dwellings: J. W. Odell's, Dearborn avenue; E. B. Beston's, 33 Delaware place; Corning S. Judd's private residence, 21 Delaware place; Allen Pinkerton's estate, corner of Adams and Monroe streets; W. J. Chalmers, 238 Ashland avenue, and F. Valz, Aston and Goethe streets.

In 1870 E. Sturtevant began business at Chicago. The new Board of Trade building,



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the Phoenix, the Singer, Field's retail store building, and other large structures, are testimonials to him.

C. H. Blair, later Blair & Bristol, was a contractor as early as 1872. The Insurance Exchange building, the Traders' building, the Imperial and the Hobbs', were erected by this firm. In 1887 the firm of Bristol & Smith was formed.

Masons' associations followed the organization of journeymen masons, but their first attempts were not well conceived. Chicago was yet too small and too poor to warrant a dividing line between employer and employe. The Mechanics, Manufacturers & Builders' exchange of 1872 had quarters at 133 La Salle street, T. Roberts being secretary. Its life was short and stormy.

The Master Masons & Builders' association was presided over in 1876-79 by Marshall Carter. George C. Prussing was secretary and W. E. Mortimer treasurer. So soon as the troubles of that period were settled, the organization lapsed, or, rather, merged into a more powerful body, which dropped the word "master" out of the title.

The Chicago Masons & Builders' association was the first organized body of builders in Chicago that maintained the right to exist and become permanent. Established in 1880, with A. B. Cook, president; G. Trieglaff, secretary, and W. E. Mortimer, treasurer, it has come down to the present time unimpaired by age or competition. In 1881 George C. Prussing was elected president, George Hinchliff, secretary, and W. E. Mortimer, treasurer. They were succeeded, in 1882, by George Tapper, H. Mueller and E. Earnshaw, holding the respective offices. 1883.—George Tapper, president; George C. Prussing, secretary; E. F. Gobel, treasurer. 1884.—Joseph Downey, president; William H. Mortimer, secretary; E. F. Gobel, treasurer. 1885-6.—George H. Fox, president; V. Falkenau, secretary; T. E. Courtney, treasurer. 1887.—Joseph Downey, president; H. Mueller, secretary; T. E. Courtney, treasurer. 1888-9.—C. W. Gindele, president; E. S. Moss, secretary; E. Earnshaw, treasurer. 1890-91.—E. Earnshaw, president; A. J. Hageman, secretary; H. Mueller, treasurer. The great interests of this body are well guarded by the Exchange, which is the embodiment of organization among contractors in all departments of the building arts.

The Builders & Traders' exchange was organized January 16, 1884. On the 9th a meeting, over which M. W. Carter presided, with E. H. Callaway secretary, elected the following to draft a constitution for the association: H. C. Hoyt, George Tapper, J. P. Ketcham, George E. White, Jonathan Clark, John Tomlinson, William H. Chenoweth, William Wilson, James John, George C. Prussing and Architect W. L. B. Jenney. The question of the election of charter officers was settled on January 21, by the choice of George C. Prussing, president; J. P. Ketcham and E. Baggot, vice presidents; F. C. Schoenthaler, secretary; Amos Gramis, treasurer; Jonathan Clark, James A. Miller, George Tapper, H. C. Hoyt, W. E. Frost, James John, J. B. Sullivan, W. H. Chenoweth, C. B. Kimball and C. C. Thompson, directors. This was the second organization of builders in Chicago, the first being the Master Masons' association, in 1880.

Among the original rules was one providing that disputes between members should be set-

tled by a committee on arbitration, whose decisions must be abided by under penalty of expulsion from the organization. The initiation fee was fixed at \$25, until the membership should reach five hundred; at \$50, when the membership should stand between five hundred and one thousand, and \$100 thereafter.

The sixty-nine votes recorded were given by the following named individuals or firms: T. H. Waterbury, 209 Wabash; John Cox, 152 La Salle; C. C. Thompson, 2598 Archer; A. W. Kenkel, 2531 State; Conrad Kies & Son, 172 South Peoria; William Kinsella, 47 Spruce; Ried & Pickett, 107 Twenty-second street; Peter Kaupp, 42 Dussold; William Wilson, 3907 Cottage Grove; D. V. Purington, 178 South La Salle; N. C. Warren, 47 West Lake; M. W. Powell, 175 La Salle; Philip Lichtenstodt, 93 West Randolph; Thomas Rowland, 127 Chestnut; C. B. Kimbell, 334 South Franklin; R. E. McKay, 640 York; H. F. Wiechman, 377 Illinois; T. J. Hodgson, 1659 ———; Pogge & Moeller, 610 Elston; C. W. Boynton, 142 North Morgan; G. T. Clarke & Co., 1527 State; W. H. Chenoweth & Sons, 76 and 78 West Monroe; T. E. Courtney, 463 Carroll; E. L. & S. H. Harland, Exchange building; George C. Prussing, 178 La Salle; George Tapper, 187 La Salle; Ulyers & Griffin, Builders' exchange; James John & Co., Builders' exchange; Edward Irons, 137 East Madison; E. H. Callaway, 175 La Salle; J. J. Lockwood, 199 Lake; Hoyt & Alsip, 210 La Salle; Strans Brothers, 43 West Fullerton; Western Brick & Tile Manufacturing Company, 175 La Salle; B. Davis, 494 Twenty-sixth street; French & Sons, 357 West Randolph; J. B. McKay, 291 Marshfield; Kosch & Van Dusen, 88 Builders' exchange; Barsby & Owens, 202 La Salle; J. R. Van Osdel, 477 Huron; McDonald Lumber Company, Kinzie and Kingsbury; William E. Cropper, 4 Third avenue; John Sutton, 54 South Lincoln; E. T. Trainor, Builders' exchange; William Mavor, 90 Third avenue; Fox & Hinds, Builders' exchange; John Mountain, 226 Sedgwick; R. T. Conway, 177 La Salle; R. Tobin, 337 South Morgan; Thomas & Anderson, 837 Polk; E. H. Hayes, 51 Builders' exchange; Marblehead Lime Company, 49 West Lake; G. D. Wean & Co., 49 La Salle; M. Mortimer, Builders' exchange; Patrick Farrell, Builders' exchange; C. G. Muller, Metropolitan block; Jonathan Clark, 241 State; F. E. Spooner, 153 Market; Meacham & Wright, 98 Market; J. B. Sullivan & Bro., 268 North Clark; Ruettner Bros., 19 De Kalb; C. Reetz & Bro., 27 North Canal; Mat. Benner, 88 West Harrison; Falkman Bros., Builders' exchange; H. J. Milligan, 178 Randolph; W. H. Iliff, 684 West Adams; George Barry, 260 Wabash; F. C. Schoenthaler, ———; Cudell & Meisner, 24 South Jefferson.

The Furber proposition, to rent the rooms, 48, 49 and 50, Arcade building, at \$2,500 per annum, was accepted. The publication of the Exchange directory, by the *Inter Ocean* was authorized, and Eugene C. Prussing elected attorney for the association. On March 28th, the use of the Exchange hall was granted to the Master Painters' association, at a nominal rent for each night of meeting, and three hundred and thirty-five members of the Exchange were reported enrolled.

On June 26, 1884, the inaugural meeting was held. President Prussing, addressing the members, drew a vivid picture of Chicago's growth; Mayor Harrison delivered a charac-

teristic speech, and addresses by W. L. B. Jenney, Alex Kirkland, D. C. Cregier, S. M. Randolph, J. P. Koteham, D. V. Purington and George Tapper were also delivered. The deaths of Matthew Kiely and D. Studley were reported. The rooms in the Republic Life Insurance building formerly rented, were reported complete.

The elections of 1885 resulted in the choice of George C. Prussing, president; L. W. Fick and E. Baggot, vice presidents; F. C. Schoenthaler, secretary; Amos Grannis, treasurer; William Grace, George Tapper, F. S. Wright, A. J. Weckler and E. P. Wilee, directors. The question of admitting architects to the floor of the Exchange was decided affirmatively in January; that of establishing an exhibit of building material was reported on favorably, and that relating to the establishment of a library noticed by the appropriation of \$825 to obtain books.

In January, 1886, the president and secretary were re-elected; Robert Vierling and Oliver Sollitt elected vice presidents; Joseph Downey, treasurer; S. S. Kimbell, E. A. Thomas, William Kinsella, F. Sundmacher and George H. Fox, directors. Thanks from the Architectural Sketch club for the use of Exchange hall were tendered through President H. Lawrie and Secretary Williamson. In February the Exchange took measures to introduce a sample lien law, and the president outlined the original lien laws of Maryland. The proposition of Higgins & Furber to erect an additional story over the rear building, 157 to 163 La Salle street, and fit it up for the purposes of an exhibit of building materials, was met by the proposition to join issue with Henry L. Gay's permanent exhibit, and the two questions coming up for discussion in February, 1886, led to a lengthy and warm debate and ended there.

In 1887 the "regular" and the "members'" tickets were presented. The latter was defeated by forty votes, the record being George Tapper, for president on regular ticket, one hundred and eighty-three, and William Grace, on members' ticket, one hundred and forty-three. Mat. Benner and A. W. Murray were elected vice presidents; F. C. Schoenthaler, secretary, and Joseph Downey, treasurer. The directors chosen were O. Sollitt, P. Henne, D. V. Purington, James John and M. Campbell. The motion of Mr. McCarthy to apply for membership in the National Builders' association was adopted and a committee of fifteen appointed on ways and means. Plans for an exchange building were presented February 21, by Messrs. Purington, Thomas and John. The labor troubles were discussed May 14, and many questions relating to the building trades were considered during the year. At the close of 1887 the membership was five hundred and eleven, being thirteen over 1886, twenty-six over 1885, and sixty-five over 1884. The death of John Rowe, a member, was recorded.

On July 9, 1887, the United Order of American Bricklayers & Stone Masons and the Master Masons & Builders' association of Chicago ratified articles of arbitration. A. E. Vorkeller, P. J. Minniter, John Pearson, Theo. Driebach and Charles J. Lindgren represented the United Order of Bricklayers & Stone Masons, while William O'Brien, Joseph Downey, George C. Prussing, George Tapper and C. W. Gindele represented the Master Masons & Builders' association on the committee of arbitration, with Judge M. F. Tuley, umpire. The

articles of agreement provided for a working day of eight hours, and placed the relations between employer and employe on an intelligent basis.

In January, 1888, the president and treasurer were re-elected, with F. Blair and M. Madden vice presidents, and James John, secretary. The latter's place among the old directors was taken by H. P. Ketcham and the following named new directors were elected: W. H. Iliff, F. S. Wright, E. A. Thomas, Thomas Moulding and A. E. Wells. The deaths of I. N. Glover and C. K. Proctor were recorded in June, 1888, and that of C. Wenckler in July. In 1889 D. V. Purington was elected president; C. A. Moses and H. J. Milligan, vice presidents; E. Earnshaw, treasurer, and James John, secretary. The directors elected in 1888 held over, while C. B. Kimbell, Robert Vierling, E. V. Johnson, M. B. Madden and A. J. Weckler were elected directors for two years.

The officers elected in January, 1890, were W. P. Ketcham, president; J. G. McCarthy and John Rawle, vice presidents; James John, secretary; Joseph Downey, treasurer. The directors elected in 1889 with C. W. Gindele, W. T. Clark, T. C. Diener, W. H. Iliff and W. H. Alsip directors for two years. The outgoing president, in his report of work for 1889, said:

"We are stronger numerically and financially than we were a year ago. At the close of 1888 we numbered five hundred and seventy-four, while at the present time we number five hundred and ninety-six, a gain of twenty-two. The total gain in assets of the exchange is \$2,862.84, of which \$1,207.19 is in cash. Four of our most valued members have been removed by death during the year. Two members were expelled for failure to comply with the decision of an arbitration committee. The present as well as the past board of directors have been compelled to follow the by-law whereby every man of moral character whose vocation connected him ever so remotely with the building interests was admitted to membership, and the government and management of the association has been shared equally by the hod carrier—if he chose to apply for membership—and the largest contractor. All will agree that such institutions as ours are much more likely to fail by reason of too rapid growth than by a slow, careful, consistent addition to their numbers. Our condition is but a repetition of other bodies with similar objects; the Boston and Philadelphia exchanges have both reorganized on a plan wherein the government of the exchange is vested in a smaller body, and with most satisfactory results. So far we have steered clear of difficulties, but the time may come when the numerical strength of our exchanges will be a stumbling block in the way of our progress toward that standard of excellence which should be our goal."

In 1891 Joseph Downey was elected president, R. F. Conway and W. H. Mortimer, vice presidents; James John, secretary; A. J. Weckler, treasurer; W. Goldie, J. R. Hansell, C. C. Bishop, E. H. Humphrey and James A. Hogan, directors for two years with the directors elected in 1890. The directors are divided into committees—on membership, on arbitration, on rooms and on finance. The library committee comprises A. W. Murray, George C. Prussing, E. A. Thomas and the secretary as ex-officio member. There are over four hundred volumes by the best authors on subjects relating to architecture and the building arts in this library.

The deceased members of the Exchange are named as follows: Adam L. Amberg, F. H. Avers, J. P. Batchen, John Bauermeister, John Brunkhorst, Marshall W. Carter, Daniel Connell, M. Cossman, M. Crowe, Levi Daso, Thomas Dowling, G. Eberlein, L. H. Fick, Jaques Froelick, J. N. Glover, Charles H. Hayden, Mat. Kiely, Abe Knisely, Richard Knisely, J. J. Maloney, Charles B. McGinnis, James McKeon, H. J. Milligan, Thomas Nelson, Martin O'Connor, J. R. Onderdonk, William Price, C. K. Proctor, John Rowe, C. G. Scheel, Davis Studley, John Spry, J. B. Sullivan, M. J. Sullivan, Joseph Titley, E. P. Wilce, Carl Winckler.

The Chicago architects, who hold admission tickets to the Exchange for 1891 are F. B. Abbott, Adler and Sullivan, Bauer & Hill, Baumann & Lotz, F. Baumann, Burling & Whitehouse, S. S. Beman, Bellinger & Frink, R. C. Berlin, E. H. Brown, W. W. Boyington, A. F. Boos, Burnham & Root, A. Blumenthal, J. H. Carpenter, F. L. Charnley, Cass Chapman, L. D. Cleveland, Cobb & Frost, H. D. Deam, Dewey & Newberry, J. F. & J. P. Doerr, Donnellan & Northnagel, William H. Drake, Edbrooke & Burnham, James J. Egan, J. N. Emmons, H. H. Evans, F. A. Fielder, F. Foehringer, J. C. Freijs, Frommann & Jebsen, Furst & Rudolph, J. J. Flanders, Edmund Gallauer, C. O. Hansen, Perley Hale, L. G. Hallberg, J. P. Huber, H. M. Hansen, Holabird & Roche, G. Isaacson, H. S. Jaffray, W. L. B. Jenney, E. S. Jennison, Clarke E. Johnson, Theo Karls, John J. Kouhn, D. A. Lapointe, Francoise Lapointe, S. Linderson, John T. Long, L. Lutken, H. B. Maggs, J. H. Moore, Otto H. Maltz, F. M. McCarthy, W. W. Myers, C. C. Miller, Eric J. Ostling, O. J. Pierce, D. S. Pentecost, George Prussing, Jr., Robert Rae, Jr., S. M. Randolph, L. J. Schaub, J. E. Schiller, J. L. Silsbee, S. V. Shipman, Alfred Smith, William Strippleman & Co., Treat & Foltz, J. M. Van Osdel & Co., J. H. Wagner, W. M. Waller, Martin Wangen, C. A. Weary, Jean A. Werzibee, Willett & Pashley and F. W. Wolf.

The Central Council of the building interests of Chicago was organized June 3, 1887, when George Tapper was elected president, H. G. Savage vice president, and F. C. Schoenthaler financial secretary. The object of association, as set forth in the constitution, is to promote the building interests of the city, harmonize the different branches, and adopt such measures as may be deemed necessary in carrying out its platform. Representatives from the Real Estate board, the Illinois State Association of Architects and Builders & Traders' exchange, were entitled to seats in this council. The organizers were Robert Vierling, representing the metal workers; H. G. Savage, steam-fitters; T. C. Diener, cut-stone contractors; John Sutton, master plasterers; M. W. Powell, gravel roofers; George Tapper, master masons; J. B. Sullivan, master painters; Ed. Kirk, Jr., galvanized iron cornice manufacturers; William Hearson, carpenters and builders; A. J. Weekler, north side brick manufacturers; P. B. Wight, fireproofers; C. B. Kimbell, non-union stonecutters, and F. C. Schoenthaler, Builders & Traders' exchange.

The National Association of Builders of the United States owes its organization to the action of the Master Builders' association of Boston on September 24, 1886, and its further action of December 6, that year, inviting the associations of master builders throughout the Union to assemble at Boston in January, 1887, for the purpose of considering plans for a

national association. This call was responded to by the Builders & Traders' exchange, represented by George C. Prussing; the Master Carpenters' association, by William Grace and W. E. Frost; the Master Masons & Builders' association, by Thomas E. Courtney, and the Master Painters' association, by J. G. McCarthy, all of Chicago, together with delegates from New York City and Albany, N. Y.; Baltimore, Md.; Cincinnati, Ohio; Detroit, Mich.; Philadelphia, Penn.; Washington, D. C., and St. Paul, Minn. This meeting issued a call for a convention to assemble at Chicago, March 29, 1887, and appointed George C. Prussing, J. M. Blair, J. S. Stevens, T. J. King and W. H. Sayward a committee to carry out the resolutions relating to the convention.

The first convention of the National Association of Builders of the United States was held at Chicago, in March, 1887. George C. Prussing, chairman of the committee of conference, was elected permanent chairman of the convention. The delegates from Chicago were: J. B. Sullivan, A. W. Murray, George Tapper, P. B. Wight, William Grace, F. V. Gindele and the chairman. A constitution was adopted and the following named officers elected: J. M. Blair, Cincinnati, president; John S. Stevens, of Philadelphia and Edward E. Scribner, of St. Paul, vice presidents; W. H. Sayward, of Boston, secretary and John J. Tucker, of New York City, treasurer. An able paper by P. B. Wight, on building contracts, was read. De Witt C. Cregier, Beeks of the *Chicago Times*, J. J. McCarthy, of the National Painters' association, W. L. B. Jenney and Harry Donovan delivered addresses, and the first convention passed into history. A resolution to eliminate the word "master," as master builder, master mason, etc., from titles and records of all societies, was offered by Campbell, of New York, who said that it was indicative of servitude, and therefore should have no place in an American organization.

The second convention was held at Cincinnati, Ohio, in February, 1888. John S. Stevens, of Philadelphia, was elected president; E. E. Scribner, of St. Paul, and J. J. Tucker, of New York, vice presidents; the secretary was re-elected, and George Tapper, of Chicago, treasurer. The elaborate report of the committee on statistics was presented to this convention, also papers on "Rules and conditions under which estimates should be submitted," on "Lien law," on "Apprenticeship," on "Improvements and advances made in carpentry," on "Improvements and advances in painting," and on other subjects connected with the trades.

The third convention was held at Philadelphia, in February, 1889, when almost every state was represented. The statistics of associations connected with the building trades, as read by the secretary, give the following numbers: Builders' associations and exchanges, sixty-three; carpenters, twenty-six; masons, thirty-one; painters, fifty; plumbers, sixty-one; plasterers, seven; roofers, four; iron-workers, four; sheet-metal workers, two; stone workers, thirteen; brick makers, ten; lumber and mill workers, sixty-two; steam fitters, one; material exhibits, seven; trade schools, three; real estate exchanges, three; architects' associations, leagues and clubs, forty-six; engineers and surveyors' associations, twenty-nine, and water-works, two, or a total of four hundred and twenty-five organizations in the United States, and twenty in Canada. A number of important questions came before this convention, among



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them being the lien laws, the establishment of a surety bureau to render easier the security of contractors' bonds, the apprenticeship question and general questions relating to the trade. The election of officers resulted in the choice of Edward E. Scribner, of St. Paul, Minn., president; John J. Tucker, of New York, and A. McAlister, of Ohio, vice presidents; William H. Sayward, of Boston, secretary, and George Tapper, of Chicago, treasurer. Among the directors chosen was George C. Prussing, of Chicago.

The fourth annual meeting was held at St. Paul, Minn., in January, 1890. John J. Tucker, of New York, was chosen president; Arthur McAlister, of Cleveland, and Anthony Ittner, of St. Louis, vice-presidents; W. H. Sayward was re-elected secretary, and George Tapper treasurer. One hundred and nineteen delegates, representing thirty-three associations, were present. The subjects discussed were numerous, important and practical, such as the "eight-hour movement."

The National Builders' convention of 1891 adopted a resolution favoring the submission to arbitration of differences between employers and employes and another regulating abuses of the subcontract system. The action on arbitration is of importance as to the running controversy on wages between the United Carpenters' council and the Carpenters & Builders' association. The most important action taken at the convention was an attempt to remedy abuses in the subcontract system. It widely prevails in Chicago. A contractor, after securing bids on details of a job, such as plastering, plumbing, etc., bids for the entire job on the prices already made to him by these subbidders. On securing the job he ignores those bids and secures others away below them. The convention made an attempt to remedy that.

The Central Council of Builders was organized a few years ago with George Tapper, president; H. G. Savage, vice president; F. C. Schoenthaler, secretary; J. B. Sullivan, T. C. Diener and A. J. Weckler, committee on credentials; H. L. Turner, C. B. Kimbell and Robert Vierling, committee on safety, P. B. Wight, H. G. Savage and M. W. Powell, committee on strikes and grievances; Edward Kirk, Jr., William Hearson and John Sutton, committee on arbitration. The idea of this council was suggested by the exigencies of the times, for labor threatened to throttle capital, and such an organization of employers to oppose the lodges of laborers came into existence. So soon as the opposition became reasonable in their demands, and it was apparent that public sentiment required the exercise of toleration and justice by both employer and employe, the Central Council of Builders dissolved.

At the close of 1886 there were represented at Chicago by regularly organized associations the following named trades: The Builders & Traders' exchange, the Master Carpenters' association, the Master Masons & Builders' association, the Master Painters' association, the Master Plumbers' association, the Master Plasterers' association, the Gravel Roofers' association, the Cut Stone Contractors' association, the Galvanized Iron Cornice Manufacturers' association, the Master Steam Fitters' association and the House Drainage association, while at Peoria, Ill., the Mechanics & Builders' exchange was in active existence.

The pioneer plasterers of the city were James Duffy, of the Fifth ward, in 1837; William Wells, boarding on South Water street at the Buffalo hotel, in 1839; Enoch Plummer, who

had a cottage on Adams street near State street; Daniel Heald, Jr., John Horner and William Worthington. The latter was a mason in 1849, and that year the name of Jacob Hauser was added to the list of plasterers. William Houffe was here in 1843. The plasterers of 1859 were Joseph B. Burgett, Barnard Dockter and Thomas White & Co. Ten years later Daniel O. Sullivan, of 181 Madison street, and John Sutton, of 79 Monroe street, were the leading master plasterers; while Louis Cashay & Co. were the principal ornamental plasterers. Low & Toms were here in 1872.

The master plasterers of 1872 were C. Baechli & Co., 164 Wentworth; Byrne & O'Brien;* Doyle & Johnson, 172 Michigan; Gerry & Wheeler;* I. N. Glover;* Hall & Son, 892 State; Higgins & Herrick;* Kelly & Melody;* James Pike;* Smith & Eastman, 940 Clark; John Sutton;* Tobey & Smith;* White & Thomas;* E. E. Williams & Co.* The asterisk represents membership in the Builders' exchange, 133 La Salle street, or headquarters in that building.

The ornamental plasterers in 1879 were E. Smith & Co., John Sutton and Tobey & Smith. The master plasterers were Dan T. Buck, Byrne & Son, Daniel Connell, John W. Conroy, Edward Kersey, John McMahon, Anthony Melody, William Owen and Ernst Vierck. In the annexed districts a large number of master plasterers carry on business.

The early ornamental plaster works include Nichols & Co., who began the manufacture of plaster statues, brackets, centers, etc., in 1886, and seven years later produced \$20,000 worth annually from their shops at 217 West Lake street. In 1868 Daprato Brothers established ornamental plaster works at 168 South Clark street, where they were burned out in October, 1871. Soon after they resumed manufacture at 341 South Clark, and in 1873 did a large trade at 287 and 289 South Clark. Godard Le Jeune & Co., manufacturers of ornamental plaster, paper mache, stone, marble, wood and terra cotta works for churches, theaters, sleeping cars, etc., opened their works at 85 Third avenue, in 1873.

The Contracting Plasterers' association was presided over by William Piggott, with A. Zander, vice president; Andrew Corcoran, secretary, and James John, treasurer. In February, 1891, this body took a decisive stand against the extraordinary demands of the journeymen, who claimed an advance of 50 cents per diem on the former pay of \$3.50 per diem.

There are few, if any, better qualified to speak on "Plastering and stucco work" than the secretary of the Chicago Builders' exchange. He has sounded all the depths and shoals of the trade. In February, 1889, he delivered the following paper before the National Convention of Builders:

"It has been my privilege to be selected to read you a brief paper on the subject of plastering and stucco work. I have seen fit to diverge to a slight extent from the text as laid down, by endeavoring to embrace the whole matter in the word "plaster." I will therefore read you what I have, with the idea that plaster will comprehend the whole of it. It has not been the fate of this simple, durable, and inexpensive material to escape the assaults which every good thing in this world must encounter at one time or another. It has been called unclean, but it is not so of itself. Like many another wholesome and useful medium, it can

be so ill-made and be so indifferently applied as to offer to dirt and insects abiding places, due to the perverted ingenuity of man, not to any inherent defects of itself. In spite of all that has been said against it, it remains the universal lining for dwellings throughout the civilized world. Wealth may encase walls and ceilings in decorative woods and metals, but for the mass of mankind plaster must continue to be the simplest, cleanest, least costly, and most enduring finish for homes. The health of the vast majority of mankind is therefore largely dependent upon the materials used in its mixture and the manner of application.

“It is undeniable that the custom that obtained some years ago of applying plaster into highly ornate designs was, for domestic purposes, unsanitary. The foliated, convoluted, and otherwise multiform designs which used to be spread out upon ceilings, in cornices, or special pieces are gradually passing out of use. Their innumerable crevices served only as receptacles of dirt, in which the deposits were continuous. The ornamental uses of plaster having been reduced by good sense and good taste, it remains still the most vigorous, as it is the oldest, vehicle for carrying down to generation after generation the masterpieces of art with which the golden age of sculpture enriched the human race. Humble as its components are, common and cheap as it seems beside marble, and paltry when compared with the metals that have to a considerable degree taken its place for reproductive uses, it still preserves the plastic art, and enables youth to contemplate antiquity in its noblest achievements. To-day plaster is revolutionizing industrial art; for us, and, in all probability, for those who are to come after us, plaster, lowly and cheap, but docile and durable, is the connecting agent with this greatest of men’s indorsements in the past.

“Plaster thus employed in duplicating great works of marble, iron and bronze, is to-day extending the finest industries, modern and ancient. The erection of the new museums in England, near the great manufacturing centers, would be next to useless were not plaster available for distributing fac-similes of the works, whose grandeur has made the name of Greece imperishable, and whose usefulness in development and the study of form, for all arts, is acknowledged to be unequalled. So potent is this simple medium, therefore, that it serves to-day as effectually as marble itself for the perpetuation of fine art, and by its endless variations of models, copied from every other material known in history, it is the supreme teacher of design. The reproduction of classic works at Kensington, and their dissemination throughout the provinces of the United Kingdom, have had the effect of making France fear for her supremacy in fine industrial productions. The important part that plaster thus plays in the Old World it will continue to play in the New. Wherever art places its altar, plaster will be there as its handmaid, and, though it may be abused by carelessness and calumniated by more pretentious rivals, it must remain the most faithful friend of progress in taste, science, decoration, usefulness and economy.

“Noble and varied as may be the uses to which plaster has and may be applied, I regret to say that the art of applying the same as an avocation for the lining of dwellings is to-day so unremunerative to the artisan that it almost ceases to enlist the skill and intelligence that the art should command. This is due mainly to the want of appreciation by the architect

and owner, whose only thoughts are for a semblance, for the time being, and are tempted by the questionable economy of saving a few dollars into letting contracts to men of no mechanical standing. It is hoped and expected that through the influence of the National Association of Builders, and the intercourse its executive officers may have with the reputable architects of the country, the day is not far distant when it will be required of the artisan in the various branches pertaining to buildings to arm himself with a proper and authoritative testimonial, giving proof that he is skilled in his art, and thus separate the wheat from the chaff, the former be recognized, and the latter find its level.

“It is a well-known fact that plaster on a ceiling surface in the event of fire will detain it for a long time, providing any means have been taken when applied to secure it under such circumstances, and, were these means more generally employed, millions of dollars would be saved to this country annually. As a fire-proof construction is the exception, and as wood construction must predominate for years to come, therefore more attention should be given to make the latter structure more fire-resisting.

“During the last twenty years I have devoted much thought to this subject, and some of the devices I have had in that direction I have sought to secure by letters patent, and, strange to say, came in conflict with an English patent in the archives at Washington bearing date 1797. The device then discovered has been slumbering there nearly one hundred years, and to-day I know of nothing more economical or effectual to secure plaster in position in the event of fire than this same device. It is simply a wire netting, as used to-day for a foundation, but, as there described, placed over the bottom surface of the plaster and then securely stapled to the furring or joists, and afterward the finishing coat of plaster applied over the surface. And as most every mechanic has at some time or other taken out a patent or applied for one, it may be interesting to you to hear the language that Edmund Cartwright (as that was the name of the applicant) used in paying due deference to his sovereign lord. After describing his invention in substantially the same language that obtains in patents of the present day, he closes thus: ‘In Witness whereof, I, the said Edmund Cartwright, have hereunto set my hand and seal this eighth day of November in the thirty-eighth year of the reign of our Sovereign Lord George the Third by the grace of God, of Great Britain, France and Ireland, King, Defender of the Faith, and so forth, and in the year of our Lord one thousand seven hundred and ninety-seven.’”

The carpenters and masons may build walls, but the roofer is required to cover them. The wigwags of the Indians are all roof, hence the Chicago roofer came in with the first faint gleams of civilization and, with the exception of over a century, 1683 to 1778, he has been known here since. In all probability the first roof that man had was a cave which he shared with his first cousins, the simians, or perhaps it was nothing more than the thick branches of a tree. Out of these natural roofs came the imitative forms, the artificial cave, called the cromlech and the hut of brushwood. The first attempts were merely erections of a few spars united together with twigs. In a more advanced stage walls of dried turf were erected and those walls connected by means of timbers laid horizontally, covered with weeds and boughs.

Rain storms soon set the primitive man to thinking, and the first fruits of this thought was the inclined roof covered with clay to carry off the rain. Vitruvius, who wrote in the time of Julius Cæsar, says that roofs were so constructed in his day by the uncivilized inhabitants of Gaul and Spain. The old Aryans are said to have used clay dried and laid on the timbers in this way. The Chinese, especially favored by nature, used nothing but bamboo, out of which alone they constructed their houses, except occasionally when they used stone for foundations. Great roofs were made of thick bamboos bent and covered with reed very ingeniously disposed. This made a very close roof and afforded a perfect shelter from the rain and heat. The Assyrians, likewise having no forests, resorted to canes. These were formed into arches, the curvature of which was fixed by a wicker frame work made of reeds placed vertically, horizontally and diagonally under the arch. On the arch were placed smaller canes, and then a layer of soft clay was placed on the top of the wall on which the arch rested. When this was dry another layer was added, and then another, all following the curvature of the arch until the whole was covered. After this the canes were no longer of use, and were usually removed. Although the supporting principle was the arch, the roof itself was flat. These structures are of the grander sort. Other Assyrian roofs were of strong beams covered with tiles or flat bricks. The Greeks covered their houses with marble tiles or terra cotta ribs. Rome was originally roofed with shingles, which constituted a standing invitation to the great conflagrations which so often swept over the city. About the time of the war with Pyrrhus tiles of burned clay were introduced. These were flat and thin—thinnest at the lower end. The joints were covered with a semicircular or angular joint tile. The tiles were accurately fitted and securely fastened to the rafters with bronze nails. When cheapness was required a shallow pan tile was used with a semicircular joint tile. With the introduction of the Gothic style of architecture came necessary developments of roofing. The Norman roofs were usually of steep pitch, showing the whole of the cross-framing of the timbers used in them and sometimes boarded on the under side so as to form a flat or slightly canted ceiling. Slates or tiles were used as the outer covering. The Chinese roofs all have a peculiar hollow dip, reminding one of the tent, and indeed it is possible that the Chinamen have preserved the memory of an ancient dwelling in their modern houses. It is said, however, that the umbrella suggests many of these Chinese house forms. Of the roof coverings in use, the common shingle is the most familiar to Americans. It has been used for a long time in all parts of the world. The shingle, however, has been replaced by other and better materials in most countries. It still lingers in the United States, principally in the South, but the business of shingle making is not a growing one. In 1880 there were forty-five shingle factories in the United States, of which twenty-five were in Kentucky, and others scattering through Indiana, Missouri, Pennsylvania and New York. The capital employed was very small—\$17,000—while the value of the product amounted to only \$48,000. But of course those statistics do not include the whole shingle products. Like most statistics, they omit the greater part of the truth. It is probable that these figures are multiplied many times by the mills in the pine forests of Wisconsin and Michigan. What is called the shaker

is simply an enlarged shingle, so called because it was used by the religious sect of that name.

The old-time thatch is still used in many parts of England, although it has been largely replaced by slate. It is not without merit, being a non-conductor of heat, and therefore warm in winter and cool in summer. By English farmers it is largely used as a roofing for dairies. It is not very clean, however, and attracts vermin, making frequent change necessary. In thatching, ordinary straw is first laid on the roof beams in bundles and fastened with spars. These spars are twigs of willow, pointed and made pliable by being dipped in water. A twist is given them and the pointed ends are thrust into the straw foundation. After the reed bundles have been so secured the edges are combed and cut, and the eaves trimmed off smooth. The ridge is sometimes made of mud, in which plants and grasses are inserted to prevent the earth being dissolved or washed away by rain. On the western coast of England and Ireland where the wind blows from the Atlantic, the whole roof is saved from being blown away by being anchored down with rocks fastened to ropes or chains thrown over the cabin.

Tiles are a roof covering of very ancient lineage, being used by the Assyrians and Romans as mentioned above. They are used to some extent in England, but the great tile-roofed towns are in Italy and Spain. The old Spanish tile, was very heavy, weighing sometimes as much as ten or twelve pounds. It is made of brick clay about three-fourths of an inch thick, and is in the form of a semi-cylindrical trough about eighteen inches long. The pitch of the roof on which these tiles were placed was slight, and indeed it could not be otherwise, considering the manner of laying the tiles. If all the roofs ever invented or used by man from that made of a few spars united together with twigs and covered with mud, to the iron shingle roof, could be placed together they would furnish a pretty good history of civilization.

The shingle roof was introduced at Chicago in 1803-4, in the building of the fort, but beyond this it did not extend until 1816-7, when the new fort and a few small log houses were roofed with split shingles. In 1832 they came into general use here and held the roofing field until the forties, when opposition came from unexpected sources.

The cement and composition roofers of 1859 were Barrett & Arnold, F. Lester & Co., Powell, Crooker & Sprague, Powell & Mansfield, Ross, House & Co. (northeast corner State and Randolph), R. J. Rundell, Ed. Simons & Co. and F. A. Thomas & Co. T. D. Griffin was then the only slate roofer. The tin roofers were Barker & Illsley, R. Edson, George Hauslein, Abram Knisely, James Parker and Rubel & Brother.

Barrett, Arnold & Kimball established the first felt and composition roofing at Chicago in 1848. In 1871 they were burned out, but before the 25th of October they resumed work in temporary buildings, giving employment to thirty-five hands. In 1872-3 there was \$275,000 worth of this roofing material sold.

In 1864 J. Wilkes Frost established a roofing factory at 372 Illinois street, which was burned in October, 1871. Three days later he was again in business.

Trentel & Turnbull's roofing works were established in 1868. In recent years a mineral cement gravel-roof, proof against the effects of winter's cold and summer's heat, has been produced by this firm.

In 1872 the Chicago Asphalt Paving & Roofing Company had a factory here. In 1873 A. C. Davis & Son established their roofing works on Areher avenue and Butler street.

Powell, Getchell & Co.* and Barrett & Arnold* (and Kimbark) were felt and composition roofers in 1869, also the Elastic Stone Roofing Company (Ben. Lombard, president), Chicago Roofing Company,* J. Wilkes Ford & Co.,* Gardiner, West & Wheeler and Whitaere & Raymond; Atkins & McLeod were "iron elad" roofers; Clark Watson, Emery & McFarland, Robert Griffith,* James Parker* and A. Gateau & Co., slate and tin roofers in 1869; S. B. Munson, in 1872; Dewey, Jones & Co., George Dow, F. J. Emery, Garry Iron Roofing Company (John F. Seanlan, president); R. M. Huffman & Co.

The roofing slate works of F. W. Leinbaeh & Co. were established in 1865. Eight years later the industry employed two hundred hands, and showed a pay-roll of \$3,000 per week. Mine and ship-roofing slate, slate tiling and flagging, valued at over \$500,000, were produced in 1872-3. No less than 100,000 squares of roofing slate were produced.

The felt and composition roofers of 1872 were J. M. Carey, the Chicago Metallie Cement Roofing Company, Chicago Ready Roofing Company, Frank Clark, Lewis Condon & Co., Cory & Ham, Excelsior Metal Roofing Company, Ford & Eustace, A. C. Gilbert, George Hartman, Hinman, Titus & Co., Jamison & Shaffer, Joseph Matthews, John Miles, John Mills, H. O'Hara, Perkins & Stevenson, Powell & Rieh, United States Roofing Company, Van Eaton & Rees, D. Vaughan & Son, William Wheeler, the Union Roofing & Paving Company, William O'Brien and A. Kniseley & Co. John B. Gerard, A. Gateau and William Randolph were zinc roofers.

The National Association of Master Composition Roofers elaimed the following named officers in 1890: J. Wilkes Ford, president, Chicago; Samnel D. Warren, first vice president, St. Louis, Mo.; H. M. Reynolds, second vice president, Grand Rapids, Mich.; William K. Thomas, secretary, Chicago; H. R. Shaffer, treasurer, Chicago, and directors, M. W. Powell, Chicago; John M. Sellers, St. Louis, Mo.; E. S. Bortel, Philadelphia, Penn.; J. L. Jones, Chicago, and G. W. Getchell, Chicago.

The Gravel Roofers' Protective association, organized some few years ago, was presided over by M. W. Powell, with A. L. Barsley, vice president; J. J. Wheeler, secretary; S. E. Barrett, treasurer; and C. W. Randolph, J. W. Ford, D. W. C. Gooding, A. Burke and L. Daley, directors. The fifth annual convention, held at Pittsburgh, Penn., in January, 1891, resulted in the choice of W. B. Lupton, Pittsburgh, president; H. M. Reynolds, Grand Rapids, Mich., and J. B. Lober, Philadelphia, Penn., vice presidents; W. K. Thomas, Chicago, secretary and treasurer; E. S. Bortel, M. W. Powell, W. H. Eberts and C. Eskilson, directors.

The Gravel Roofers' exchange is presided over by H. R. Shaffer, with D. W. C. Good-

* Here in 1872.

ing, vice president; John L. Jones, secretary; S. E. Barrett, treasurer, and M. W. Powell, G. W. Getchell and W. K. Thomas, directors.

Since 1872 the stained shingle and many kinds of steel roofing have found a market here, roofing firms have multiplied, and the roofer himself has been exalted into the realms of the contractor.

The National Association of Iron Roofing Manufacturers was organized in 1886-7. The fourth annual convention assembled in January, 1890, when the following named officers were elected: James A. Miller, president; J. G. Battelle, vice president; J. E. Annis, secretary and treasurer; C. H. Conner, J. G. Battelle and J. C. Snyder, executive committee; C. A. Scott, T. C. Snyder and R. J. Hyndman, tariff committee.

The fifth convention was held at Cincinnati, in January, 1891, when the original constitution was subjected to some amendments and the following officers elected: Charles Aldrich, of the Missouri Iron Roofing & Corrugating Company, St. Louis, Mo., president; E. C. Ewing, of the Wheeling Corrugating Company, Wheeling, W. Va., vice president; and R. J. Hyndman, of W. G. Hyndman & Co., Cincinnati, Ohio, secretary and treasurer.

Slate was scarcely known here until after the war, but tin roofs were common. Slate now rules in gabled houses of the better class and is growing daily in public favor. A paper read by W. B. Lord, before the Architectural Sketch club, February 13, 1888, and published in the *Inland Architect* of April, 1888, deals very fully with this interesting roofing material. He writes as follows:

"The early history of slate is obscure. I have been able to trace its use only to the thirteenth century, when the quarries of North Wales furnished slate for the roofs of the old historic castles of Conway and Caernarvon, which were erected about 1300 A. D. The production of a good slate is limited in the British Islands—elsewhere than in Wales—although some quarries in central England and a few localities in Scotland have been worked for many years, but it is rough and heavy, and the amount quarried is limited. The quarries of Killaloe, in Tipperary, Ireland, are of considerable importance, producing a good quality, but somewhat rough. The possibility of an increased production from these quarries both in quantity and quality is encouraging, for the reason that they are in the proper formation, and with more quarrying promise to produce a slate equal to the Welsh, and thereby relieve the demand, which is greater than can be supplied. In time the Welsh quarries will be about exhausted, and those of Ireland will be called upon to contribute their share of the demand. Enterprising Americans with an eye to business are taking advantage of the gradual failure of the Welsh quarries, the present obstacles which are retarding the development of those of Ireland, and also of the fact that although it is quarried at many points on the continent—only the local trade can be supplied—are shipping large quantities to foreign countries. At the end of the twelfth century slate was used in the construction of the castle of Angers, France, from the extensive quarries which are located at that point, this being the oldest quarry and about the first in use on the continent. The principal slate-producing regions of the United States are Rutland county, Vt.; Washington county, N. Y.; Lehigh,

Northampton and York counties, Penn.; New Canton, Va.; Monson, Me., and Baraga county, Mich. Workable deposits are known in other localities, but at present they are inaccessible. *The first quarry in Rutland county, Vt., was opened about the year 1840, and in Washington county, N. Y., about 1850. In these two localities are found our red, green and purple slates. The remainder of the localities produce the black and the blue-black. Slate from Lehigh and Northampton counties, Penn., is known to the trade respectively as the Lehigh and the Bangor. The Lehigh slate is quarried at and in the vicinity of Slatington. Bangor, Pen Argyll and Chapman's produce the bulk of the Bangor slate. A preference is shown for the Bangor, and more No. 1, as they call it, is specified than can be supplied for roofing. Through inattention and inability to distinguish the difference, a great deal more of No. 1 Bangor is paid for by the consumer than is used. The York county, Penn., quarries produce what is commonly called 'the Peach Bottom' slate. They were opened about eighty years ago, which may be stated as about the date of the commencement of the slate industries of the United States. This being undoubtedly the best slate in this country and the demand for it so great, the production is now limited and but little on the market, as the quarries are too deep to profitably work. Near New Canton, Va., lie comparatively inexhaustible deposits of most excellent slate, which is fully the equal of the 'Peach Bottom.' The quarries have been extensively worked for years, and are equipped with all necessary machinery, planers, saws, rubbing beds, etc. The toughness of this slate makes it more expensive to work than the softer varieties, but the extra quality of both roofing and slab slate produced by this quarry will more than repay the small extra cost.

"Slate is one of the few mineral products of nature which is particularly adapted by its peculiar formation to a great variety of uses. Its mining and manufacture as an industry of the future is full of bright promise, as its merits become more widely known and appreciated, and the right business tact followed in its introduction. Slate quarries in well selected localities, conducted by men with adequate capital, and practical knowledge enough to conduct both quarrying and selling, with judgment, is a profitable enterprise. There are different varieties of slate which derive their names from the distinguishing mineral constituent, but none of them have the commercial value of clay slate. They are classified: micaceous, talcose, chlorite and clay slates. The micaceous are blue and gray in color, speckled with minute particles of mica. Its more compact varieties are used for curbing and flagging. The

*The first slate quarry ever opened in the Vermont slate region was that of Col. Alonson Allen, of Fair Haven, in 1839, at Scotch Hill. The first quarry at Poultney was that of D. & S. E. Hooker, opened in 1851. In 1853 Benjamin Williams opened the Jay Gould quarry at Middle Granville, and in 1872 a quarry was opened one mile east of Granville by Merritt Bardwell and Evan Jones. Shortly afterward were opened the quarries now owned by Rising & Nelson, and at West Pawlet by Jake McFadden and Owen Evans. That section of the country owes much of its prosperity to its Welsh citizens, the majority of the quarries having been opened by those people, two or three of whom will accumulate a little wealth, form a partnership, locate a slate-bed which runs nearly north or northwest by south or southwest and commence operations. When all they possessed is gone they will with a landable courage try again. It is by these energetic men that the region has been developed. When a paying quarry is found capital is willing to step in and help the enterprise. From 1853 to 1860 Jay Gould operated quarries at Middle Granville, and made the beginnings of his wealth there. The quarrying of slate is a scientific task which men work at for a lifetime and then find means of improving the method. It is one of those things that Yankee ingenuity can never master. It takes a man that has worked at the business from childhood to be a successful quarry man. The slate-making trade is such that the person who does not master it before he is twenty can never split a block. The children of quarry-workers commence splitting blocks when they are ten years old. In other words it is a hereditary trade, something like that of tin-dipping as described in the references to tin-plate manufacture.

talcose contains a large percentage of the mineral talc (commonly called soapstone), and is used for scythe and hone stones, its color being greenish and having a greasy feel. The chlorite is a brighter green than the talcose, not so greasy feel, and is generally very hard and strong. The true clay slate or slate of commerce is closely allied to other varieties; sometimes the finer passes into chlorite schists, like the green slates, while the coarser passes into sandstone by an increase of quartz and loss of alumina. The pure argillaceous (clay) slates are sometimes converted into hornblende schists. A schist means a redistributed, finer assortment of particles. In the selection of slate as well as building stones, care and judgment must be exercised, as a vast quantity of worthless material is on the market. True slate or slate of commerce may be defined as a fine-grained, compact and exceedingly fissile (readily split) mineral, varying in color from black to dark blue, purple, shades of green, gray, and brick red. It has the property of being hard without being brittle, and capable of resisting a pressure of about twenty thousands pounds to one cubic inch without crushing, or it may be soft and tough. When free from impurities, it is a non-absorbent of water, and does not disintegrate in the air. It is capable of sustaining a high degree of heat without fusing or cracking and can readily be carved or turned. It is easily worked and takes a smooth finish. By the marbleizing process it is coated in an unlimited variety of colors, imitating marble for mantel work, and hardwood for matching trimmings, decorations, etc., for interior woodwork. The different colors of slate are chiefly due to the various proportions of the compounds of iron in its composition. It is present in ordinary blue slate as protoxide of iron, an excess or lack of which and the absence of peroxide of iron is the cause of the many different shades of blue. If the slate be of good quality and ring, and the color rich deep-blue or black, and of uniform shade, it will not fade and is durable. In the green slates the proportion of protoxide of iron is one-third less than the blue. Traces of phosphoric acid and magnesia in combination with the oxides of iron, produce the green shades. The unfading green has a larger proportion of the peroxide of iron and calcium carbonate, and less of magnesia than the sea-green, and, therefore, is a less prominent and more durable color. The sea-green slate makes a good roof, as the quality is generally good, but the color will fade in time to a grayish shade. The purple cannot be relied on for color. The only red slate in the world which has been found practicable to quarry is found in Washington county, N. Y., although veins have been found in other states. It commands a good price on account of its scarcity, as the veins are thin, few in number and soon exhausted. There are several shades of red, varying from a dark red to a light pink. The dark and medium color is the most reliable for both color and strength. The pink is apt to be brittle and to fade.

“The soft, black slates contain considerable carbonaceous matter and disseminated sulphide of iron in a decomposed state, which will develop into a white efflorescence, and ruin a roof after a short exposure to the elements. For roofing purposes a careful selection for even color and metallic ring must be made, if a durable job is desired. From the softer deposits of this slate are manufactured our school slates and pencils. The variegated slates are derived from deposits in layers and irregular masses, tinged with differently colored pigments,

and afterward changed into slate by natural processes. Analyses show that the bulk of slate deposits are composed of silica and alumina, and were at one time ordinary clay. Slate does not possess the numberless varieties of color, nor the susceptibility of polish which marble assumes, and therefore on the strength of appearance alone, irrespective of adaptability, marble is very often used, especially for plumbers' work, where the use of slate would prove more sensible and lasting, because of its strength, imperviousness to water and fluids generally, and consequent cleanliness. The most important of the properties of slate, and that which gives it its value as a roofing material, is its remarkable cleavage structure, which may be defined as easily splitting, when fresh quarried, in planes parallel to each other. In no product of nature, except mica, is it developed to such a degree, and taken advantage of, as in the manufacture of roofing slates.

"Slate is quarried by drilling holes and blasting, taking all possible advantage of slips, joints and floors, or, I might say, natural seams and peculiarity of formation, to displace it without unnecessary breakage, and as the planes of cleavage lie at an angle of from forty-five to sixty degrees it cannot be quarried like stone, on a horizontal line, but necessitates a considerable judgment and ingenuity to economically loosen the blocks from the bed. The blocks are then hoisted to the surface by the derricks, put on a truck and run to the slate makers' shanty. The blocks as they come out are very irregular, so one of the splitters' assistants breaks them into sizes suitable for splitting into slates, in length and breadth sufficient for handling, and about two inches in thickness. These blocks are placed in piles on the left hand of the splitter, who is seated on a bench raised a little from the floor. The splitter then takes a block between his knees, and with a wooden mallet and a broad thin chisel splits it through the middle, and continues dividing the blocks into equal halves, until they are reduced to the thinness of roofing slate. These thin pieces of slate of irregular sizes are then taken by an assistant and economically cut in a dressing machine to the various sizes in use. The dressing machine is an arrangement of knives which cut the slate somewhat similar to a pair of scissors. In the manufacture it is put through the various processes without unnecessary delay, because it is more readily worked before the quarry water dries out. In fact, it about loses the property of splitting when free from sap, and this is taken advantage of by using it for building work, such as sills, posts and slabs. Where a flight of iron stairs is desired, no better material for the treads can be found than a good quality of slate, because it will give a firm hold for the foot, and not wear out. A flight of stairs with a slate tread in an exposed and wet situation, if the tread has enough incline to allow the water to run off, will not become slippery, because the slate does not absorb the water. The trimmer or dresser, as the man is called who cuts the slate to size, sorts the slate as he makes them into first and second qualities, and also arranges each size together, ready to be carried and placed on the pile in the yard. Three grades of slate are made, to wit: No. 1, No. 2, and ribbon. No. 1 consists only of what is smooth in texture, uniform in color, straight in grain and free from knots. What lacks these qualities, and are not ribbon, are called No. 2. A band, from the breadth of a line to an inch or more, is sometimes noticed in a slate. Such slates are

called ribbon, and are of little value, because of a difference between the quality of the ribbon and the two sides of it. Considerable skill, judgment and honesty is required in placing slate upon a roof. The slate should be selected, rejecting all seconds and ribbon, and should be laid with the regular required lap for the various sizes, using a sufficient quantity of slating nails to firmly attach them to the roof. If good work is desired, proper results with less inconvenience will be arrived at, if the architect exercises care in his specifications, and demands that they are adhered to, in addition to requiring a time warrant on the work, as is the custom. For cheap roofing slats are nailed to the rafters, from two inches to four inches apart, and the slate is laid on these slats. The usual way is to board the rafters, nailing the boards tight, with a space of about one inch between each board, to obviate as far as possible the shrinking and swelling, which loosens the nails and breaks the slate. Then lay the roofing felt over the boards and lay the slate on the felt. If an extra job is required, bed them in cement. A slate roof is laid by first placing a course on the eaves. All courses above this one must be laid with a lap of more than one-half the length of the slate shingle, or the vertical joints, which are not close, will not be covered. The lap of the slate is more than one-half of its length, so the more lap a course is laid with the better will be the roof. Manufacturers allow three inches when selling a square of slate, and architects should see that the roof is laid with that amount of lap, as a less one is a considerable gain for the dishonest roofer, which he takes advantage of. A square of slate covers ten square feet, and weighs about six hundred pounds. Although the original cost of a slate roof will be more than that of other materials in use, if proper care is exercised in selection of material, and honest work is done, it is the cheapest in the long run. Where practical, the larger sized slate should be used, for the reason that only the best rock can be split in the large sizes, and you will be sure of getting good slate. Another advantage in a large slate is that they cost less, as the labor in making them is less, and also the cost of putting them on the roof.

The roofers, manufacturers and dealers in roofing material in 1891 were as follows: Thomas Allen, Aulwurm & Lee, S. E. Barrett Manufacturing Company, Fred E. Bennett, John P. Bly, Bodine Roofing Company, Augustus Burke, Louis E. Bussiere, John M. Cary, Chicago Car Roofing Company, Charles G. Cobb, T. E. Conner & Co., Harry Deming, J. J. Devlin & Co., Empire Car Roofing Company, J. Wilkes Ford, G. W. Getchell & Co., George Glenz, E. Griffith, George M. Gross, John Harris, John L. Kneisly, Lloyd Iron Roofing & Paint Company, Albert Luettko & Co., McKeon & Wheeler, McMahan Bros., J. Meador & Co., James A. Miller & Bro., Charles Moore, Frank J. Mullen, William Murdoch & Co., North Chicago Roofing Company, B. F. Nourse & Bro., Arthur Oakes, Jacob Oakes, M. W. Powell & Co., Powell & Jones, Charles W. Randolph, Felix D. Renaud, Renaud & Coghlan, Rich & Walsh, Richard & Rosenbaum, Max Seele, H. R. Shaffer & Co., Shanks & Reid, Josiah Spencer, Standard Roofing Company, Turnbull & Cullerton, Waddell & Dermody, H. F. Watson, B. F. West & Co., W. W. Wheeler, Wheeler & Thomas, W. H. Wyman and J. H. Zeller & Co.

CHAPTER XII.

BRICK AND TERRA COTTA.

BRICK and stone were the first permanent building materials used here. In 1855 iron was added, and subsequently burnt clay, stone, iron and steel entered into the construction of the city house. In Chicago, brick was the first permanent building material, and it is given precedence.

The brick age dates back to the building of the Chaldean and Assyrian cities, when clay was burned in all shapes for walls, floors, roofs and wainscoting. Throughout the cradle land of the human race, the rich alluvial plains offered excellent clay to the workers, and Babylonia became a country of palaces and of such cities as Nineveh. The temples of Ur and Erech show the age of terra cotta and enameled brick, and for centuries, before the Assyrians plunged into barbarism, the building arts were observed. During the first three hundred years of the Christian era the brick work of the Romans was superior to everything, but in the fourth century the Christian architects resorted to the use of the old material of the ruins or old basilicas for their new houses, and for this reason brick manufacture declined. A writer in the *Brickmaker*, on this subject of Roman brick, says:

“They have several sizes of bricks, one of which they call bipeda, or two Roman feet long; another, didoron, about six inches broad and one foot long. In Palladio’s time, artificial stone or bricks were called quadrels, and according to Pliny, those chiefly used were one and one-half feet long and one foot broad, which also agrees with the size mentioned by Vitruvius, though Alberti says: ‘We see in some of their buildings, and especially in their arches, bricks two feet every way.’ He afterward remarks that in several of their structures, particularly in the Appian way, were several different sorts of bricks, some smaller and some bigger, and he mentions having seen some not longer than six inches, nor broader than three inches, and one inch thick, but these were chiefly used in their pavements and edgewise. Palladio observes, bricks may be made bigger or smaller, according to the nature and quality of the building and the use to which they are designed. They also made bricks of other forms than those enumerated. ‘I am best pleased,’ says Alberti, ‘with their triangular ones, which they made in this manner; they made one large brick, one foot square and one and one-half inches thick; while it was fresh, they cut it in two lines crosswise, from one angle to the other, which divided it into four equal triangles. These bricks had the following advantages:

They took up less clay; they were easier to dispose of in the kiln and to take out again; they were more convenient for working, because the bricklayer could hold four of them with one hand, and with a small stroke, divide one from the other; when placed in the wall, they appeared like complete bricks of one foot long. Some of these bricks are to be seen in the walls of Rome, particularly that part built by the Emperor Aurelian."

It is now about a year ago since Andre Matteson contributed a paper on "Adoban houses" to the old *Building Budget*. He traces the work of the ancient adobe manufacturers from the Old to the New World, and, introducing it to Chicago in 1844, speaks of its adaptability to the prairie region. "In a new country," he says, "and in some very old countries, also, there is no more inexpensive, easily attainable, and under favorable climatic conditions, no better material for the walls of houses of modern height, than adobes. The word should be pronounced in three syllables, a-do-be. It is from the Spanish verb adobar, to compose, compound, 'fix up', make a mixture of ingredients, as that for tanning hides, which is called adobo, or, in our English vulgate, dope. In making adobes, a dope of clay, kneaded with water, and sometimes chopped straw, is shaped in molds (as in making other bricks) and dried in the sun. Adobes are bricks, sun dried, but not baked. It is a fair presumption that they were among the first materials ever employed by human architects. The transition from the cave dwelling of the troglodyte to the adoban hut of his more enterprising brother, was as simple and natural as that from the frontier 'dug-out' to the frontier 'sod house,' one being an earthen habitation under ground, the other an earthen habitation above ground. It was a betterment of the occupants' condition, a step forward. But the materials of architecture in unknown times, as in known times, depended greatly on the geology of the region. Occupying a land of rocks and mountains, the Greeks employed stone, mainly; dwelling in forests, our Saxon ancestors, like the Iroquois, dwelt in structures of wood; in the alluvial plains of Egypt and Assyria, bricks have ever been the most common material. Their manufacture began with the first dawn of civilization, and traverses more than forty centuries, perhaps many more. When, in the plain of Shinar, the descendants of Noah said, 'Go to! Let us make bricks and burn them thoroughly,' they betrayed knowledge of the brickmaking art, which could only have been gained by much accumulated experience. They understood the business—knew the difference between bricks thoroughly baked and bricks half baked, the strength of the latter being unequal to that of sun-dried adobes. Presumptively, the manufacture of the latter began first, the more costly baked bricks denoting increasing wealth and a corresponding demand for better architecture. But sun-dried bricks did not go out of use. Such was, and is, their economic value, that they have held an important place in the building art of all ages unto our own time, and are yet successfully vindicating their claim to favorable consideration. In all ages, bricks baked and unbaked have been used together in the same structures, and even in the same walls. It is said that the tower of Babel was wholly of 'bricks well burned', a condition obviously necessary to the plan of the architects. Adobes hardly would sustain the great weight of a tower whose top story should be in heaven. But the walls of less lofty edifices in Nineveh and Babylon were only faced with bricks, well

burned, the remainder being of adobes. A similar construction was practiced many centuries later in Rome, where heavy walls of concrete were veneered with hard bricks. In that marvelous work, the great Chinese wall, stones, baked bricks and adobes were used in different parts, according to the geology of the districts traversed. Anciently, there may have been a similar practice in Egypt, though antiquarian research supports the opinion that the bricks of that rainless land were in ancient times mostly adobes, as they still are. Some of the smaller pyramids are of that material. Recent excavations on the site of the treasure city, Pithon, built by Rameses II., with the bondage labor of the Israelites, prove that almost all the buildings were tremendous storehouses, built wholly of adobes, some made with straw for bonding and some without it.

“In ‘A practical treatise on the manufacture of bricks,’ Mr. Charles Thomas Davis says it is probable ‘that the first bricks made in the New World were burned in 1650,’ at New Haven. He is mistaken in time by perhaps eight or ten centuries. Bricks well burned, as well as unburned, were made in the sixth century, and perhaps earlier, by the builders of Anahuac, who, for the excellence of their architecture, received the name of *Tolteca*, a word in the Nahuatl language, which means architect, builder or artificer. In the tropical forests of Tabasco are ruins of cities and great edifices, built unknown centuries before the discovery of these continents by Europeans, some of them wholly of well baked bricks, and others of these in combination with adobes, in the manner of Babylonian architecture. Nor does the likeness of materials end here, though in style the Assyrian and the Toltecan edifices were very dissimilar. During a long period, the buried palaces of Nebuchadnezzar supplied bricks for all the modern buildings in the vicinity; in Hillar, a city of over eight thousand people, there is said to be hardly a house that is not built with them. ‘To this day,’ says Layard, ‘there are men who have no other occupation than that of gathering bricks from this vast heap and carrying them for sale to adjacent towns and villages, and even to Bagdad.’ So in Tabasco. In the modern village of Comalcalco, a population of over two thousand, every house, and even the sidewalks, are built of well-baked bricks, taken from some mounds in that vicinity—the sepulchres of ancient Toltec temples. Searching among these ruins (represented by a chain of mounds traversing a distance of twenty miles), M. Charnay says: ‘I had the good fortune to pick up two bricks covered with curious designs. A concentric drawing covers the first, and the second bears the full likeness of a warrior, with feathers about his head—a rude drawing made on the soft clay before it was baked. Both are in the ‘Trocadero,’ of Paris. It is said that Nebuchadnezzar emitted a decree, ordering his signet to be stamped on all bricks made in his dominions, and Sir Henry Rawlinson, in examining the walls of the modern city of Bagdad, discovered on an almost creamy brick the clear trace of that regal signature. It must not be concluded that these coincidences furnish proof of any relationship between the art of brickmaking in ancient Assyria and ancient Anahuac.

“The meager remains of ancient Peruvian architecture are characterized by colossal dimensions rather than by any artistic feeling, taste or skill, as in that of the Toltecs. There are a few examples of cyclopean construction in stone, sometimes rudely cut and sometimes in the

natural form of great boulders, but the preponderating material is adobe. These were made of enormous dimensions. In the notable ruins of Gran Chimu and Pachamacac, of origin indefinitely anterior to the advent of the Incas, are seen adobes of ten or twelve yards long and five or six yards broad, prodigious blocks of clay that doubtless were formed *in situ*. Their width represents the thickness of certain walls at the base, from which they sloped upward to a thickness of a few feet. Neither baked bricks nor stone seems to have been used in these gigantic structures, whose now very dilapidated ruins, with the respectable age of perhaps ten or fifteen centuries, proves the enduring power of adobes for building purposes in a climate where frost is unknown. Excepting in Peru, no American examples of such colossal adobes have been discovered. In the ruined cities of Central America and the Mexican highlands are plentiful examples of brick and adoban construction, but no blocks of great dimensions. The largest, probably, are those in the ruined *Casas Grandes* of Arizona (near the Gila river) and Chihuahua. Though the great pyramid of Cholula is a solid mass of adoban masonry of dimensions not much inferior to Cheops, it appears to contain none of any uncommon size.

“In modern construction, adobes are seldom made of greater dimensions than twelve or fifteen by eight or ten inches and three or four inches thick. They never should be laid in the wall until perfectly dry, and the time saved in drying adobes of only three or four inches thickness more than compensates the increase of labor in molding them. The notion of some northern people that a peculiar kind or quality of clay is required is erroneous. Any clay will make adobes, though the purer and stronger the better. Some very strong clays are unsuited to making baked bricks, by reason of the presence of lime or other foreign substances that interfere with the chemical reaction that takes place in the burning, but in making adobes, these obstacles are not serious. The clay should be thoroughly kneaded before molding; indeed, the best process of manufacture is the same, excepting the burning (and the use of cut straw, if desired, for bond), as in making commonbricks. The green adobes should be placed, however, on frames or skids, that will raise them above the ground, so that all sides will be exposed to the air and be sheltered from rain. That adobes are a good and durable building material in climates not subject to extreme changes of temperature, their common use during thousands of years has proven. They are still the staple material of walls in all Oriental lands, in northern Africa, South America, Central America, Mexico and the southwestern portion of our own country. Throughout Spanish America, among creoles as well as aborigines, they are, par excellence, the building materials of the poor, nay, also of the country gentleman, the *hacendados* and *rancheros* who are often rich in lands and herds. In a treeless country, even if stone is abundant, an adobe house represents the minimum of cost and the maximum of comfort. Its thick walls—an adobe wall should have a thickness equal to one-fifth or one-sixth of its height though many, even in earthquake regions, have less—are a protection alike against the heat of summer and the cold of winter. No house can have a more equable temperature than the adoban house, and none can more easily pass through the whole range of architectural styles, from the square box of the Egyptian

fellah and the Aztec horticulturist of the floating gardens to the bishop's palace and the majestic temple of God. The Mexican Central Railway Company (composed mostly of Boston capitalists) have built of adobes the handsomest stationhouses on that great highway. No innocent traveler ever would suspect that the commodious stationhouse and hotel (with customhouse attachment) in Paso del Norte (now City of Juarez) is an edifice of mud walls. Such is the fact. Countless temples of religion in Mexico, New Mexico, Arizona and California, much admired as examples of grand ecclesiastical architecture, are in their material structural brethren of the mud hovels of the indigenes for whose spiritual welfare and permanent comfort most of them were built. Why may not this cheapest and most abundant of all building materials furnish a solution of one of the important economic problems in the settlement of the vast treeless and stoneless plains of the cyclonic west, and even of the blizzardous kingdom of the northwest wind, 'Kewaydin?' While it is true that frost will disintegrate a wall of adobes sooner than a wall of granite, it is also true that the parish church of Santa Fe, built of adobes more than three hundred years ago, was still used for public worship in 1885, and would be yet if it had not been pulled down to give place to a costly temple of stone. The climate of that mountain city is by no means exempt from frost, but presents great extremes of temperature. About 1844 an adoban house was built in the northern division of Chicago. The adobes were made of the tenacious blue clay that underlies the whole of this region, and of which so many millions of hard but otherwise inferior baked bricks have been made. That house was still in good condition at the epoch of the great conflagration, 1871, proving that the durability of adobe walls, even in this climate of terrible extremes and much precipitation of moisture, is at least equal to that of wooden walls. There is no reason to doubt that, properly constructed, such buildings, anywhere, would be more enduring than structures of wood, while in the matter of comfort, there could be no comparison.

"The adoban houses should stand on rising ground, affording, if possible, perfect natural drainage away from the walls in all directions. If the land does not furnish such a site, it will pay to make an artificial elevation. A foundation wall of stone, rising above the surface of the ground at least a foot, is important to prevent moisture from the earth penetrating the lower courses of adobes. If stone can not be procured, hard-burned bricks will serve, but in either case, this foundation wall should be laid with very little mortar, or, better still, without mortar. The walls should be built in the dry season, and be carefully protected while building against rain. The adobes may be laid in clay mortar, or without mortar, excepting as it may be needed to even up the courses. If the building is of two stories, the exterior walls of the first story should have a thickness of two feet; for the second story, eighteen inches, or even less may suffice. Partition walls may be of wood, in the usual way; if of adobes, a thickness of eight inches is sufficient, but they must have a dry foundation on the ground.

"An important requirement of the roof, whatever the material used in its construction, is that it shall have a wide projection over the walls, to protect them against heavy or long continued rains. The best construction is that which the aboriginal architect of the tropics

generally practices. He seldom builds higher than one story, and projects the ceiling joists (which also serve him for rafters) eight or ten feet beyond the walls of his house, thus forming a covered veranda on all sides. This arrangement furnishes outdoor shelter from the hot rays of the sun, from whatever point in the sky that orb may look down. The owner takes advantage of it. In the morning he goes out and leans against the wall of his mansion on the shady side. When the sun looks around the corner, he beats a dignified retreat around the next corner and holds up the wall on that side. Thus retreating before the sun, he fulfills his daily task of keeping in the shade by making the diurnal circuit of his dwelling. I do not commend his mode of life, but his method of house building has its advantages for a frigid climate as well as for a torrid climate.

“Hope speaks of bricks being made in the form of lozenges, and some were even molded, or were, after being cemented together in regular layers, carved out into every variety of architectural ornament, as we see at Rome in the remains of the Amphitheatrum Castrense, of the temple of the god Ridiculus, and in another building, where even the capital and foliage of the Corinthian order are cut out of solid masses of brickwork. With regard to the method of manufacture, we learn from Vitruvius that a red or chalky white earth, of a strong sandy nature, mixed with straw, was considered the best, on account of its not being heavy, which it was thought better to dig in the autumn, and make it into bricks early in the spring; after they were molded, they were placed in the shade to dry, and, when made properly, they were not put into the kiln for two years afterward. Alberti says the ancients mixed marble with the red earth; and it was also customary for the Romans as well as the Egyptians to inscribe and impress their bricks with various devices. In the bigger sort, holes were left, that they might dry and burn better.”

Brickmaking in America is as old as the Toltec and older than the Mobilian race. Burned or baked clay and adobe cubes have been used in Peru and Mexico from time immemorial, but the manufacture of bricks by the American-Caucasian, dates only back to 1650, when a kiln was burned at New Haven, Conn.

The first building of burned bricks erected within the territory now known as the United States, was that of 1633, on Manhattan Island, by Governor Van Twiller, of the Dutch West India Company, for his own use. The bricks were brought from Amsterdam, just as enameled bricks are now imported from Leeds, England. Small brick houses for the officials of the colony were also erected, the Amsterdam bricks being the material used. Charles T. Davis, in his paper on this subject, published some years ago in the *American Architect*, speaks of the durability of those pieces of burnt clay, and states that some of the bricks of 1633 may still be found in the older Dutch houses of New York City.

The first brick house erected west of the Alleghany mountains, is still standing at Kaskaskia, Ill. It was erected before the close of the seventeenth century, perhaps prior to 1680, A. D. The bricks used in its construction were carried down the Ohio in keel boats. Prior to 1718 the gabled brick houses of the colonial period were common throughout the French settlements, but the house at Kaskaskia was the palace of the prairies two hundred



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years ago, and to-day presents an air of its ancient importance, for the whole town is as quaint as it is historic, antedating Chicago, and was great when the present metropolis of the West was a waste of mud and water.

The Spaniards and French used very large bricks at New Orleans and Mobile in early days, and, even during the first half of the present century, large bricks were not uncommon. The demolition of the Masonic Temple in 1890, in New Orleans, La., disclosed the fact that bricks of an unusual size were employed in its construction. The ordinary brick used in New Orleans measures eight and one-quarter inches long; these old bricks measure nine inches, and require only seven courses to make a depth of two feet in a brick wall. But a more notable feature of the construction of the old temple are the bricks used in the cornices. They measure $11 \times 2\frac{1}{2}$ inches in length, five and one-quarter inches in width and four inches thick, and are apparently made of the same durable material as the others. These bricks were made at the old Delachaise plantation, above the city, and were, without doubt, especially designed for the Masonic Temple, which was erected in 1845. The sidewalks and some of the older buildings in the ancient town of Natchitoches, La., are constructed of large, hard bricks.

In 1803-4 brick was brought to Chicago to be used in the construction of the magazine at the fort. In May, 1833, a brickyard was established between North Dearborn and Clark streets, on the river front, by Tyler Blodget. His employe, Henry S. Lampman, a brickmaker from the "Allen settlement," or Ann Arbor, Mich., made the first bricks for the first brick house—that of the owner of the yards—on the south side of the river, opposite the yards. Major Handy was the only bricklayer and mason in the village of that day. The brick manufacturers of 1839 were: Caleb Blodget, North Water near Wells; Daniel Elston, Elston Road; John Penny, north branch; Henry Ward, Superior street near river. The bricklayers of 1839 were: John Casey, resided at corner of Market and Washington streets; William Hough; Charles Sloan, La Salle near Illinois street, and John Vogt. In 1843 the following named brickmakers were here: Wood & Ogden, John Penney (died in 1851), John J. Penney (died in 1849), George W. Penney (died in 1868), Francis C. Sherman (died in 1870); Daniel Elston, pressed-brick maker, in 1843, with yards on north branch (died in 1855); Timothy Garvey, John Flavin, Florida Hughes, Vincent H. Freeman, John S. Weeks. The brick manufacturers who were here in 1849, were: Paul B. Allen, Carpenter street and Chicago avenue; W. B. Bliss, Canal street, near Penney's yard; Robert Dunn, south branch; Jacob Gephart; Samuel Harvey; Fred Knocker; John, A. J. and G. W. Penney, south branch. The boss bricklayers were: A. Dunnigan, B. Donovan and William Taylor, with, perhaps, one or more of the bricklayers and masons named in the chapter on masons and builders. Penney & Sons, Penney & Meacham, Meacham & Harvey, Daniel Elston and F. C. & E. Sherman, were all in the brick manufacturing business in 1854, and three years later ten other yards were producers. In 1855 the total value of the product of all the yards was \$260,000, increased by 1856 to \$712,000, and giving employment to 500 hands. Early in 1853-4 Chicago bricks delivered at the building, cost \$4.25 per thousand. During the summer, however, the price was advanced to \$6.

The brickmakers and dealers of 1859, and the location of their yards, are given in the

following list: George W. Dunlap, south branch between Throop and Rucker streets; Gerould, McEntee & Co., north branch; Canal between Eastman and Division; S. H. Harvey, Canal street between North and Old; Innis & Decker, Blue Island avenue near river; Monaghan & Co., north branch, Canal near Division; John Nibbe, north branch, Canal near Division; Nye & Davies, South near Halsted; Penney & Meacham; Seaman C. Ripley, corner South and Brown; Walbaum & Co., north branch, Canal near Eastman; Walker & Cutting, South, corner of Rucker; Joseph Watkins, Division near Larrabee; Wilson & Bros., Throop near Clayton.

In 1869 Lyman Bridges was a dealer in bricks, and also in sashes and doors, at 70 Washington street; Jones, Corrigan & Co., manufacturers at Lock and Hickory streets, and Isaac Wentworth on Laffin, near south branch, in 1869.

The owners of brickyards in and near the city, in 1873, who established their industries subsequent to 1862, find mention here, and the location, product of yards and number of men employed are given.

In 1863 the Strauss, Hahne & Co. brickyard, on Wood street and Blue Island avenue, was established by Supt. P. McQuaid. After the fire this concern produced 25,000,000 common and 2,500,000 pressedbricks annually, and their yards on the Ogden slip were established. The United States brickyards on the canal near Brighton park date back to 1866, when F. C. Wells operated them. The number of employes varied from twenty to three hundred. Moulding, Harland & Co.'s yards, on south branch near Ashland avenue, date back to 1868. In 1873 the production was 10,000,000 per annum, with a large output of Indiana red pressedbricks, hollow partition tiles, vases, drain tiles, etc. This company furnished some of the bricks for the Palmer and Grand Pacific hotels. Miller & Johnson's brickyards were established in 1868. After the fire John McQuaid was superintendent, and through him contracts for supplying bricks to the Barnum & Richardson manufacturing company, Schuettler's wagon factory, the Palmer and Grand Pacific, and other large buildings were made. Miller & Meyer's yards on Robey street, and Staples' and Van Loan's yards on the south branch near Ashland avenue, date back to 1868, and were heavy producers after the fire. Busse & Bro.'s yards on Robey street were established in 1870. Henry Jones & Co., on Wood street south of Blue Island avenue, in 1872; Hoyt & Alsips' near Western avenue, in 1872; Whiting Bros. and Bolan's, on Ashland and Blue Island avenues in 1872 (supplied bricks for Aiken's theater, Woodruff's hotel and the Western News Company's buildings); Gen. O. L. Mann's yards, near river, between Robey and Wood streets, and on Blue Island avenue, in 1872; Ohm & Kistner's yards, Blue Island avenue and Robey street, in 1872; Jones & Small's yards near Western avenue bridge, in 1872; N. Eisendrath's yards, near Ashland avenue bridge, in 1872; the Excelsior Pressed Brick Manufacturing Company's yards (W. L. Gregg, president, and George D. Blair, secretary), at Gregg depot, on the Chicago, Burlington & Quincy railroad in 1872, and Henry Koertz's yard, on Laffin street near the river, in 1873. Those yards may be said to have produced all the common bricks used in the erection of the large buildings here between the fire and the summer of 1873.

In 1871-2 brick manufacturers and dealers flocked hither in great numbers, and with them came manufacturers and dealers in brick machines. Among the latter were the Eagle Works Manufacturing Company and the United States Brick Machine Company. Foster de Masters represented the Little Giant Brick Press Company, while John George and F. Jacobin were dealers in brickmaking machinery. The brick manufacturers and dealers were F. Amman & Co.,* Hawthorne avenue and north branch; J. Busse,* Bros. & Sturtevant, Steele and Lincoln streets; Conklin & Campbell, Laffin and Twenty-second; A. J. Corrigan & Co., Lock and Hickory streets; De Golyer & Hubbard, Dexter near Ashland avenue; Derickson & Sons, Laffin and Twenty-second; E. R. Gard, Ashland avenue near the river; Hayt & Alsip,* McLean and Pear streets; Jones Bros., Blue Island avenue and Wood street; Jones & Small, Western avenue bridge; John Kane, Douglass place and Ashland avenue; Kastens & Dettman, Hooker near Division street; Lizotti & Co.; Loberg & Co., Elston avenue near C. & M. R. R. crossing; Joseph M. Lyons, 105 South Clinton; Miller & Myer, Robey street near Blue Island avenue; Moulding & Harland, Ashland avenue near river; Louis Luellet, Fullerton near Ashland avenue; Naiser & Binzo, north branch near C. & M. R. R.; Nason & Co., Wood and Blue Island avenue; Kirk B. Newell, F and Uman streets; Ohm & Kastner, Robey and Blue Island avenue; Proctor & Co., Fullerton near Ashland avenue; Schanze & Muller, Mud lake; Chris Slueter, Dexter near Western avenue; Snow & Alsip, Leavitt and Steele streets; Staples & Van Lone, Dexter near Ashland avenue; Strauss, Hahne & Co.,* Wood and Blue Island avenue, and Hawthorne and Eastman streets; Thornton Brick works of F. L. Honore; Hobart Red Pressed Brick Company, represented by Waterbury & Mills; David Whiting, Ashland near Blue Island avenue, and John F. Whiting, Ashland avenue near Twenty-second street.

Round the old Builders' exchange of 1872 a number of brick dealers, agents and manufacturers had their offices. Among them were Fred Bauer, F. W. Buckingham, E. L. Craw, Eisendrath & Liebensteen, D. Jackson & Co., Merchant & Holden, Pierce & Skelley, S. W. Sawyer, C. A. Smith, R. W. Smith & Son, Solomon Snow, P. Thurber and J. D. & T. Tully.* Scattered round the old business center and in the suburbs were other agents and dealers, such as Colburn & McCaw, 68 Market street; E. Hayes, Wood street near Blue Island avenue; Legnard & Shanll, Ullman near Division; O. L. Mann, Robey near Blue Island; John Nash, Exchange building; J. N. Smart, 216 Monroe; Mortimer Scanlan, 164 Monroe; S. Thatcher, Jr., 114 Wabash avenue, and Dunne & Scanlan, 164 Monroe. In 1873 there were 16 brick-yards, employing 1,472 men; 5 artificial stone manufacturers, employing 217 men; 1 asphalt pavement manufacturer, employing 20 men; 26 stonecutters, employing 2,416 men; 10 marble manufacturers, employing 321 men, and 1 roofing slate manufacturer, employing 200 men. Of the whole number, 66 were established prior to 1860.

In 1879 the firms marked thus * above operated brickyards. There were, also, John W. Dunne, 210 La Salle; C. H. Frost, 157 La Salle; Martin C. Hale, E. & L. H. Harland, Hupe & Kreetenstein, Reuben Jenkins, D. A. Jones, Labahn Bros., Lill & Morrison, William McKeuney, Fred Nusser, D. V. Purington & Co., P. J. S. Sexton, William Strauss, Sundmacher & Brauckmann, Robert Tobin and Adam Weckler.

The following list will show who have been engaged in the manufacture and sale of bricks in Chicago since 1882. It has been sought to mention only manufacturers and exclude all mere sales agents. The bases of the list are the successive issues of the Chicago directory, 1882-91. It is probable that some houses began business the year before they are here credited with having begun, and that some continued in business until the year succeeding that last mentioned in connection with their names. Palpable omissions have been supplied, and slight changes in firm organization will account for apparent repetition in some instances:

E. & L. Harland, Thirty-second southwest corner Ullman, 1881, Thirty-third near Ullman, 1882, Union Stock Yards; Hoyt & Alsip, North Douglas avenue near river, 1881, south branch and Thirty-fifth, and Thirty-ninth, 1880-88; John F. & C. Labahn, North Ashland avenue northeast corner Dunning, 1880-81; John Lembeke, North Ashland avenue near Diversey avenue, 1880-84; Lembeke & Till, Southport avenue southeast corner Diversey avenue, 1880-81; Lill & Morrison, 163 Washington and Hawthorne avenue near Labansia avenue, 1880-81; Thomas Moulding, 1889-91; Frederick Nusser, Elston avenue near North Paulina street, 1881, 830 Elston avenue, 1882, 87 Fremont, 1883, 830 Elston avenue, 1880-84; D. V. Purington & Co., Thirty-eighth southeast corner Ullman, 1880; Sexton & Jones, South Wood near Blue Island avenue, 1880; William F. Straus, Hawthorne avenue foot of Rees street, 1880-81; T. & J. D. W. Tully, Thirty-third near South Ashland avenue 1881, South Branch between Thirty-third and Thirty-fifth, 1880-85; Adam J. Weekler, 1880-91; Gottfried Amman, Dexter avenue near South Ashland avenue, 1886, Dexter avenue near Ashland avenue bridge, 1881-6; Chicago Anderson Pressed Brick Company, yards, Elston avenue near Asylum place, 1881-91; Chicago Philadelphia Pressed Brick Company, 6124 Dearborn, 1881; Eugene D. Fisk, Twenty-sixth corner Rockwell, 1881; Haegle, Robzien & Kurz, Diversey avenue near Clybourn, 1881; Frank Amman, Hawthorne avenue near Willow, 1880; Chicago Ventilating Brick & Tile Company, 1880; John Downey, Dexter avenue near South Ashland avenue, 1880; James Dunn, 1880-84; John W. Dunn, 1880-90; C. H. Frost & Co., 1880; William Hahne, Hooker northeast corner Division, 1883, Clybourn avenue corner North Hoyne avenue, 1880-84; Hale & Co., 1880-86; Harland & Groves, 35 West Adams street, 1881-82, Holland, Wehbrodt & Co., Elston avenue near West Fullerton avenue, 1881; Frederick Kaehler, Southport avenue near Diversey avenue, 1881; Henry Koeritz, Dexter avenue near South Robey, 1885, Thirty-first corner South Western avenue, 1881-8; Frederick Kuchl, Elston avenue southwest corner West Fullerton avenue, 1882, Fullerton avenue corner Bond, 1883, Clybourn avenue near Diversey avenue, 1881-3; Frederick Labahn, North Ashland avenue near Diversey avenue, 1881-2; John Lambeke, 1442 North Ashland avenue, 1888; Frederick Lambeke, Southport avenue near Diversey avenue, 1883, Southport avenue southwest corner Diversey avenue, 1885, 531 Southport avenue, 1881-91; John J. Lockwood, 199 Lake, 1881-4; Louis J. Mueller, North Ashland avenue near Diversey avenue, 1883, 1386 North Ashland avenue, 1889, 1412 North Ashland avenue, 1881-90; Purington & Kimbell, 1881-2; Harris Brothers' Pressed Brick Company, 1885-8; Duplex Pressed Brick Company, works Porter, Indiana, 1882; Harland, Weichbrodt & Co., 1882; Hinch-

eliff & Owen, 1882-4; Hoeking Valley Fire Brick Co., 50 North Clinton, 1882; Jones & Sexton, 58 Pacific avenue, 1882-3; Frederiek Kaehler, Southport avenue near Diversey avenue, 1883, 508 Southport avenue, 1885, North Ashland avenue southwest corner Diversey avenue, 1886, 505 Southport avenue, 1882-6; Kuester & Riemer, Diversey southwest corner North Ashland avenue, 1882-5; Labahn Brothers, North Ashland avenue northeast corner Diversey avenue, 1885, 1466 North Ashland avenue, 1882-5; F. W. & L. N. Labahn, North Ashland avenue northeast corner Diversey avenue, 1882-3; Sundmacher & Brauekmann, North Ashland avenue southeast corner Wrightwood avenue, 1881-2; Robert Tobin, Dexter avenue near South Ashland avenue, 1881-5; A. Van Deursen & Co., Thirty-first corner California avenue, 1881-2; Werdell & Hahne, Diversey avenue southwest corner North Ashland avenue, 1881; Lawrence Werheim, north branch near Fullerton avenue, 1881; Frederiek Zapel, north branch near Fullerton avenue, 1881; John Busse, 39 Long John, 1883, 142 Henry street, 1884, 140 B Henry street, 1889, 140 Henry street, and Forty-fifth near South Western avenue, 1882-90; John F. Whiting, Ashland avenue southwest corner Egan avenue, 1882-3; Julius Weiebrodt, 935 Elston avenue, 1885, Elston avenue near Webster, 1887, Elston avenue near Asylum place, 1890, Elston avenue near Western avenue, 1882-90; G. A. Boland, Illinois & Michigan Canal near Thirty-first street, 1883; Wahl Bros., 238 and 240 Randolph, 1887-90; John F. Labahn & Co., North Ashland avenue corner Dunning, 1882; George Lill, works Evanston, 1882-91; Lutter & Bohnsaek, Diversey avenue near Perry street, 1882; Manske & Wartman, 328 South Clinton, 1882-3; Michael Meyers, Dexter avenue near South Ashland avenue, 1888, Dexter avenue corner South Hoyne avenue, 1889, South Leavitt corner Dexter avenue, 1882-9; William Miller, North Ashland avenue near Diversey avenue, 1881, 1465 North Ashland avenue, 1882-5; John Speekboeher & Co., Elston avenue southeast corner Diversey avenue, 1882; A. W. Telfer, Son & Co., 1882; H. Tresselt & Co., Elston avenue corner Snow, 1882; Aspinwall & Dungan, 1883; Pogge & Moeller, Elston avenue near Snow, 1882-91; Coal Field Company, 1883-4; John Dunn, 1882-4; E. Graves & Co., 1883; C. W. Kempster, 1883; H. Koeritz & Co., South Robey near Dexter avenue, 1884, Thirty-first street near Western avenue, 1883-4; Philip Lichtenstadt, 93 West Randolph street, and on Illinois & Michigan Canal between Western and Kedzie avenues, 1886, south bank Illinois and Michigan Canal, between Western avenue and Roekwell, 1883-90; Henry Lutter, North Ashland avenue southeast corner Wellington avenue, 1883-4; Morrison & Son, northwest corner Hawthorne avenue near Wabansia avenue, 1883; Myers & Griffin, Dexter avenue near South Robey street, 1884, Dexter avenue, Hoyne and Thirty-first, 1885, Dexter avenue corner South Robey, 1886, Dexter avenue west of Ashland, 1883-6; Purington-Kimbell Brick Company, 1883-90; A. Van Deursen, Thirty-first corner South California avenue, 1883; John Huttenlosher, Diversey avenue near Clybourn avenue, 1885; D. A. J. Jones, Thirty-first corner South California avenue, 1885-91; Jones & Hayman, 1885-6; F. W. Labahn & Bro., 1374 North Ashland avenue, 1888, 1334 North Ashland avenue, 1885-8; John B. Legnard, 1885-90; John N. Lembeke, Ashland avenue southeast corner Diversey street, 1885; Loekwood & Kimbell, 432-36 Fifth avenue, 1886, Areher avenue

southeast corner Wallace, 1890, Twenty-fifth street and Illinois Central Railroad, 1885-90; Strauss Bros., West Fullerton avenue bridge, 1888, West Fullerton avenue near Brand place, 1885-90; John C. Tatge, Thirty-first near Western avenue, 1885-6; Forest Glen Brick & Tile Company, 266 Blue Island avenue, 1885-6; Tiffany Pressed Brick Company, 1885-90; Bengin Bros. & Co., Diversey southwest corner Clybourn avenue, 1886-91; George Voss, Elston avenue northwest corner Asylum place, 1886, Elston road corner Milwaukee Railroad bridge, 1887, Asylum place near Elston avenue, 1883-8; Western Brick & Tile Manufacturing Company, 1883-4; Frank J. Amman, Hawthorne avenue near Willow, 1884-90; Bohn & Balke, East Wabansia avenue, corner Harthorne avenue, 1884; John S. Boland, Wood near Thirtieth street, 1884-85; Edward H. Callaway, 1884-85; Harland & Harms, 1884-91; E. W. Hendricks, 1884-6; Illinois Pressed Brick Company, 1884-8; Louis N. Labahn, 1334 North Ashland avenue, 1884-9; McKenna & Kearney, Long John and Illinois & Michigan Canal, 1885, Bross avenue, corner Long John, 1887, Archer avenue near California avenue, 1884-7; Morrison Brothers, Harthorne corner Wabansia avenue, 1884-5; Louis Riemer, North Ashland avenue near Diversey avenue, 1884; John M. L. Sexton, 1884-9; Hermann Tresselt, Elston road near Fullerton avenue, 1884; L. Werheim & Son, Fullerton avenue near north branch, 1884; Abbott & Wright, 1885-6; F. & W. H. Alsip, 1885-7; William Bach, Diversey avenue southwest corner Clybourn avenue, 1885; Martin Balke, Hawthorne avenue northwest corner Wabansia avenue, 1885; Christiansen & Callaway, 1885; Galesburg Pressed Brick & Tile Company, 1885-7; Garden City Brick & Tile Company, 1885-9; William E. Hinchcliff & Co., 1885-8; Julius Hundrieser & Co., Hawthorne avenue near Wabansia avenue, 1885-7; Patrick J. Sexton, South Leavitt street near Thirty-ninth, 1888-90; Alsip Brick Company, West Chicago avenue corner Hamlin avenue, 1887-90; J. F. Becker & Co., Elston avenue corner West Diversey street, 1887; Bober & Semmerling, Hawthorne avenue corner Wabansia avenue, 1887-8; Carbon Pressed Brick Company, 1887; Excelsior Brick Company, 1887; E. Harland & Co., Robey corner Thirty-eighth street, 1887-9; George Hinsley, 319 Elston avenue, 1887; May, Purington & Co., 1887-90; Herman Meinke, Elston avenue near Snow, 1887-90; Meyenberg Brick Company, Root and Oswald streets, 1888, works South Clark, Root and La Salle, 1887-8; Fred Nusse, Elston avenue near Armitage avenue, 1887; Perth Amboy, Terra Cotta Company, 1887-9; Robinson Brick Manufacturing Company, Sixteenth corner Richmond avenue, 1888, 739 W. Harrison, 1887-91; Burke & Co., 1886; Burrell, Dungan & Co., 1886; John N. Koester, Ashland avenue near Diversey street, 1886; M. C. Kearney & Co., Long John corner Thirty-first street, 1886; Lill Brothers, 1886-7; John N. Limeka, North Ashland avenue southeast corner Diversey avenue, 1886; W. B. Owen, works at Hobart, Ind., 1886-91; Conrad Sundmacher, North Ashland avenue near Wellington avenue, 1886; Henry Sweet, 1455 Milwaukee avenue, 1887, West Chicago avenue near North Central Park avenue, 1888, 1531 Milwaukee avenue, 1886-8; Thomas Tully, 1886-8; Wight Fire Proofing Company, 1886-90; William F. Strauss & Bros., 41 West Fullerton avenue, 1887; Chicago Brick Company, 1888-91; Chicago Brick & Mill Company, Chicago avenue corner St. Louis, 1888-9; Jones & Heartt, South Oakley avenue northeast corner Thirty-third, 1889, 823 Blue Island

avenue, 1888-91; Kuester & Thurow, North Robey near Clybourn avenue, 1888; Pullman Brick Works, 1888-91; John Thatcher, Thirty-first street southeast corner South Western avenue, 1888; Keystone Pressed Brick & Tile Works, 1889-91; Kuester & Riemer, Diversey avenue corner North Ashland avenue, 1889-91; Edward Lehman, Kedzie avenue corner West Thirty-first, 1889-90; Mayer & Toll, North Western avenue near Franklin avenue, 1890, Elston avenue near North Western avenue, 1889-91; Moulding & Lyon, 1889-90; E. Harland & Co., 1889; Hayt-Alsip Company, 1889-91; H. & J. Strass, 41 West Fullerton avenue, 1889-90; William E. Hincheliff, 1889; Frederiek W. Labahn, 1374 North Ashland avenue, 1889-91; William Kuester, North Robey near Clybourn avenue, 1889; Wechler Brick Company, 1279 Clybourn avenue, 1890, 32, 159 La Salle, yards, Addison southwest corner Western avenue, 1889-91; Bauermeister Bros., Elston avenue near Hoffman avenue, 1889-91; John Boland, Thirty-first and Illinois & Michigan Canal, 1889-91; Alexander Burke, West Fortieth northwest corner West Eighteenth, 1889-91; Bush & Dressel, West Twenty-sixth street corner South Rockwell, 1889-90; Martin Carney, South Robey and Illinois & Michigan Canal bank, 1889; William H. Dymond, 1889; Grape Creek Clay Works, 1889-90 (later H. & H. Brick Co.); Harland, Hahn & Co., West Twenty-sixth corner Sacramento avenue, 1889; George Hincheliff, 319 Elston avenue, 1889; Frederick Nusser, 798 Elston avenue, 1889; Arthur W. Penny, 1889-90; Triebull & Franz, Thirty-first corner South California avenue, 1889-90; Wandreik & Ritter, Hawthorne avenue near East Wabansia avenue, 1889; William W. Wartman, Thirty-first corner South California avenue, 1889-91; Weckler-Prussing Brick Company, 1279 Clybourn avenue, 1889-91; Weckler Brick Company, 1279 Clybourn avenue, 1890, Addison southwest corner Western avenue, 1889-91; West Chicago Brick Works, Chicago avenue near Humboldt Park boulevard, 1889; Zapel & Sons, Belmont avenue near Western avenue, 1889-90; S. Abbott, 1890; William Bach & Sons, Western avenue and Roseoe boulevard, 1890; William Bohnsack, 1532 North Ashland avenue, 1891; Chicago Anderson Common Brick Company, 1890-91; Chicago Hydraulic Press Brick Company, 1890-91; Dymond & Stafford, 1890; William Hahne's Sons, Clybourn avenue northeast corner Hoyne avenue, 1890; Harland Brick Company, 1890-91; Ferdinand N. Helmann, North Ashland avenue northwest corner Wellington avenue, 1890; Jefferson Brick Company, 1890-91; Kaseh & Helmuth, Thirty-first street corner South California avenue, 1890-91; William Kinsella, 1890-91; Labahn Bros., 1374 North Ashland avenue, 1890-91; Carl Labahn, 1466 North Ashland avenue, 1890-91; John F. Labahn & Co., 424 Belmont avenue, 1890; John P. Labahn, 1500 North Ashland avenue, 1890-91; Lane & Co., 266 Blue Island avenue, 1890-91; John J. McKenna, 1890-91; William A. Miller, Ashland and Diversey avenues, 1890-91; William McKenna, Archer and California avenues, 1890-91; Charles Mueller, 433 Belmont avenue, 1890-91; Louis Mueller, 1386 North Ashland avenue, 1890; Michael Myers, Rockwell near Freeman, 1890-91; Peerless Brick Company, 1890; Terra Cotta Brick Company, works South Clark and Root streets, 1890-91; Union Brick Company, 4824 South Halsted, 1890-91; Wehrheim & Son, Wellington avenue and Paulina street, 1890-91; Charles Wendel, 311 Belmont avenue, 1890-91; Frederiek Wolff, 339 Belmont avenue, 1890-91; Frederiek Zapel, 1525 North Ashland avenue, 1890-91; Otto T. Zapel, Hoyne and Wellington avenues, 1890-91.

Besides some of those already given, the following names first appear or reappear often a considerable interval in the directory of 1891: Alsip Brick Company, Frank Alsip president, W. H. Alsip secretary and treasurer, and Frank B. Alsip superintendent; Frank Amman, Hawthorne avenue northeast corner Clay; Virgil Brand, Brand street near North Robey; Daniel Blaul, 511 Belmont avenue; Bush & Dressel, West Twenty-sixth street corner South Rockwell; John Busse, Forty-fifth street corner South Western avenue; Chicago Retort & Fire Brick Company, Forty-fifth street corner La Salle; George B. Engle, Jr.; Otto J. N. Hage, Robey street near Wrightwood avenue; William Habnc & Sons, Clybourn avenue northeast corner Hoyne; Charles Harmes; Ferdinand Heymann, North Ashland avenue northwest corner Wellington; William Kinsella; John F. Labahn, 424 Belmont avenue; Frederick Lambeke, 531 Southport avenue; Charles Lange & Co.; La Salle Pressed Brick Company; John B. Legnard; John Lindeman; May, Purington & Bonner Brick Company; Herman Meincke, Elston avenue near Snow; William A. Miller, Ashland avenue northwest corner Diversey street; Fritz Moeller; Thomas Moulding; Peerless Brick Company, works outside Chicago; Pogge & Moeller, Elston avenue near Snow; the Purington-Kimbell Brick Company; Joseph Semmerling; John M. L. Sexton; P. J. Sexton, South Leavitt near Thirti-ninth street; Star Brick Company; George Starr; John C. Tatge; Tiffany Pressed Brick Company; Friebull & Franz, West Thirty-first street corner South California avenue; John W. Vaughan, Chicago avenue corner Phinney; Wahl Brothers, 239 Randolph street; Wandrick & Ritter, Hawthorne avenue near East Wabansia avenue; the Weber Labahn Brick Company.

During the last decade brick machinery has multiplied. Improvements have been introduced in all departments of brick machinery, and brick manufacturers have been alive to appreciate them. From a list of apparatus published in the *Brickmaker* and other periodicals, the following information is obtained.

Brick molds—Arnold, D. J. C., New London, Ohio; Carnell, George, Philadelphia; Frey-Sheckler Company, Bucyrus, Ohio; Henry Martin Manufacturing Company, Lancaster, Penn.; Penfield, J. W. & Son, Willoughby, Ohio; Raymond, C. W. & Co., Dayton, Ohio; Wellington Machine Company, Wellington, Ohio. Brick-mold sanding machines—Fletcher & Thomas, Indianapolis, Ind.; Newton A. H., Cohoes, N. Y.; Jonathan Creager's Sons, Cincinnati, Ohio; Penfield, J. W. & Son, Willoughby, Ohio; Wellington Machine Company, Wellington, Ohio. Brick machines for semi-dry clay—Chisholm, Boyd & White, Chicago; Kulage, Joseph J., St. Louis, Mo.; Staver & Walker, Portland, Oreg.; Wilson, E. J., Atlanta, Ga. Brick machines for soft mud—Anderson foundry and machine works, Ind.; Chambers Bros., Philadelphia; Carnell George, Philadelphia; Craycroft, Benjamin, Vandalia, Ill.; Frey-Sheckler Company, Bucyrus, Ohio; Fletcher & Thomas, Indianapolis, Ind.; Henry Martin Brick Machine & Manufacturing Company, Lancaster, Penn.; McLagon Foundry Company, New Haven, Conn.; Nolan, Madden & Co., Rushville, Ind.; J. W. Penfield & Son, Willoughby, Ohio; Staver & Walker, Portland, Oreg.; Wellington Machinery Company, Wellington, Ohio. Brick machines for stiff clay—Brewer, H. & Co., Tecumseh, Mich.; Chambers Bros., Philadelphia, Penn.; Frey-Sheckler Com-

pany, Bucyrus, Ohio; Kells & Sons, Adrian, Mich.; Nolan, Madden & Co., Rushville, Ind.; Penfield, J. W. & Son, Willoughby, Ohio; Staver & Walker, Portland, Oreg. Cutting tables, automatic—Brewer, H. & Co., Tecumseh, Mich.; Nolan, Madden & Co., Rushville, Ind. Cutting tables, hand—Brewer, H. & Co., Tecumseh, Mich.; Frey-Sheckler Company, Bucyrus, Ohio; Nolan, Madden & Co., Rushville, Ind.; Penfield, J. W. & Son, Willoughby, Ohio; Staver & Walker, Portland, Oreg.; Wallace Manufacturing Company, Frankfort, Ind. Brick dryers—Staver & Walker, Portland, Oreg.; Iron-Clad Dryer Company, 261 Dearborn street, Chicago. Iron dryer cars—Iron-Clad Dryer Company, 261 Dearborn street, Chicago. Dump cars—Frey-Sheckler Company, Bucyrus, Ohio; Raymond, C. W. & Co., Dayton, Ohio. Dump tables—Used for dumping brick on to pallets; Wellington Machine Company, Wellington, Ohio. Sand dryers—Jordan F., 200 Broadway, New York; Roberts E. M., Ashland, Ky.; Worrell S. E., Hannibal, Mo.

Brick kilns—Endaly W. A., Cincinnati, Ohio; Fort Wayne Continuous Kiln Company, Fort Wayne, Ind.; Glenboig Union Fire Clay Company, Glasgow, Scotland; Harper, J. H., agent in United States for Glenboig Union Fire Clay Company, room 74, 161 La Salle street, Chicago; Meyenberg, F. P., Chicago; Morrison, R. B. & Co., Rome, Ga., P. O. box 335; New Discovery Kiln Company, Chenoa, Ill. Kiln irons—Such as clamps for kiln bands, grates, kiln bands, kiln doors and frames, rings for crown of kilns; Carnell George, Philadelphia, Penn.; Frey-Sheckler Company, Bucyrus, Ohio; McLagon Foundry Company, New Haven, Conn.; Raymond, C. W. & Co., Dayton, Ohio.

Clay conveyors—Frey-Sheckler Company, Bucyrus, Ohio; Frost Foundry Company, Galesburg, Ill.; Henry Martin Manufacturing Company, Lancaster, Penn.; Penfield, J. W. & Son, Willoughby, Ohio; Staver & Walker, Portland, Oreg.; Webster & Comstock Manufacturing Company, Chicago. Clay crushers and pulverizers—Brewer, H. & Co., Tecumseh, Mich.; Frey-Sheckler Company, Bucyrus, Ohio; Frost Foundry Company, Galesburg, Ill.; Martin, Henry, Brick Machine & Manufacturing Company, Lancaster, Penn.; Newell Universal Mill Company, 23 Bethune street, New York; Nolan, Madden & Co., Rushville, Ind.; Penfield, J. W. & Son, Willoughby, Ohio; Smith, Robert B., 118 Dearborn street, Chicago; Staver & Walker, Portland, Oreg.; Stedman's Foundry & Machine Works, Aurora, Ind.

Hand Presses—Carnell George, Philadelphia; Kueny, N. M., Philadelphia; Miller Samuel P. & Son, Philadelphia; Raymond C. W. & Co., Dayton, Ohio; Staver & Walker, Portland, Oreg. Steam Presses—Johnson, William Leeds, England; Carnell George, Philadelphia; Miller, Samuel P., & Son, Philadelphia; Raymond C. W. & Co., Dayton, Ohio; Staver & Walker, Portland, Oreg.; The Frey-Sheckler Company, Bucyrus, Ohio. Pug Mills Brewer H. & Co., Tecumseh, Mich.; Fletcher & Thomas, Indianapolis, Ind.; Frey-Sheckler Company, Bucyrus, Ohio; McLagon Foundry Company, New Haven, Conn.; Penfield J. W. & Son, Willoughby, Ohio; Staver & Walker, Portland, Oreg.; Wallace Manufacturing Company, Frankfort, Ind.; Wellington Machine Company, Wellington, Ohio. Iron pallets—Hartman George W., Philadelphia. Steel pallets—Chambers Brothers' Company, Philadelphia. Wooden pallets—Mershon W. B. & Co., East Saginaw, Mich.

In 1872 the era of red pressedbrick was introduced here and with the Philadelphian product came also the bricklayers; for then, it may be said, that western layers did not understand the method of placing brick from outside scaffolding. The prices of labor were high for this class of work; but when it is remembered that the layers of the new bricks were subjected to the criticism of Chicagoans and their material and style brought daily into comparison with that phenomenon of architecture, the Crosby opera house, it is not a matter for surprise to find the skilled workmen looking for higher pay. For nine years pressedbrick worked its way gradually into popularity, and then came the Montank, the Calunet, the First National bank building, the Chicago Burlington & Quiney offices, with a hundred other massive monuments to its utility. What influence the introduction of the hydraulic elevator exerted in the conception of the early ten-story pressedbrick buildings of this city is considered in other pages. The influence of severe frosts on pressedbrick was considered in 1887, and its employment in the construction of the proposed auditorium was negated in favor of granite.

The Pullman brickyards were established prior to the beginnings of that town, and the bricks manufactured there were used in the erection of all the buildings of the magic city, and subsequently in the construction of the large sewers of that part of the city then known as Hyde Park village. From January, 1880, to January, 1883, there were forty-five million bricks used in the construction of buildings at Pullman, nine-tenths of which were supplied by the new yards.

The reminiscences of any one of the manufacturers named tell of ventures and vicissitudes. In no country outside the United States were such sacrifices to improvement in brickmaking performed, and in no other country could the individual or firm making them survive the trial. Here, there was space, there was enterprise, so that while a new system was failing in one section, an improvement on that system was succeeding in another. The president of the Brick Manufacturers' association, speaking in the convention of January, 1891, said:

“The manufacturer of bricks cannot point with any degree of pride or satisfaction to much progress or advancement made toward the betterment of his methods in the early part of this century, for it was not until 1835 that even an attempt was made to make a brick except by the old-time primitive hand methods. In that year the first horse-power brick machine was invented; its operation by steam was not perfected until 1840, in which year the father of the writer was mobbed for introducing a machine in the city of Philadelphia. It was destroyed, and the castings were thrown into the Schuylkill river, such was the prejudice and antipathy of the old-time brickyard employes to any methods or improvements that appeared an innovation to their old-time ways. However, as the demand for bricks increased with the growth and progress of the country, so also the markets, especially in larger cities and populous centers, called for a better article, until the active clayworker and the cunning hand of the machinist, in a measure, solved the problem, and put in practical shape and successful operation methods that had been deemed impracticable and theories pro-

nounced exploded. While there are clays so chemically constructed as to be difficult to manipulate and reduce by machinery to a consistency requisite for a good brick, yet in the last few years machinery has in a large degree supplanted the old-time manner of producing bricks that has been in vogue for centuries. Until the brickmaker of to-day can point with pride to the improved methods of conducting his business, and view with satisfaction the wonderful changes wrought in the production of this most useful article, the quality of the output and the character of the product throughout the country well attest the vast improvement and the certain betterment of the business of brickmaking. I venture the assertion that among the practical and observing men attending this gathering, no matter what lines of thought their minds have followed, or what special departments of the great building interest of the land they have made the study and business of their lives, there are but few who have observed the noticeable change in the character and substantial and permanent improvement in the quality of the bricks in the irrespective localities. If fully engrossed in your own specialty, gentlemen, you can but be mindful of the beautiful color, smooth surface, texture, and architectural design of the bricks of such cities as Philadelphia, Baltimore, Trenton, Zanesville, Evansville, Cincinnati, Chicago, St. Louis and other localities.

“Improvements in brickmaking, as in all other branches of business, are made practical and useful only through a full understanding of the requirements of the trade and careful attention to a great self-evident business law, deviations from which generally result in disaster to him who does not take the pains to learn his business, even to the minutest details. From the old-time hand process to the crude and illy-constructed pug-mill, then the tempering wheel, finally the machine run by hand, then the horse-power, until to-day we find hundreds of different kinds and character of brick machines run by steam and adapted to the different clays of the different States, skillfully adjusted and perfectly automatic in the wonderful construction, many capable of turning out fifty thousand or more perfect bricks per day. Time would permit mentioning only a few localities where the great advancement in the business is progressive to a marked degree. I would ask the builders from Philadelphia to bear testimony to the wonderful growth and progressive advancement in the art of brickmaking in the city of “Brotherly Love;” from the bricks in William Penn’s house, now in Fairmount park, though made nearly two centuries ago, crude, rough and irregular, yet sound, strong and almost indestructible, giving promise of centuries to come, to the beautiful, smooth and almost incomparable pressedbricks, which approximates more nearly a perfect brick than any yet produced on either continent, and which occupies so conspicuous a place and adds so much in beauty and effect to the striking yet distinctive character of architecture of that beautiful city. In New York and other Atlantic cities we find houses built of bricks brought from Holland, fully two hundred years ago, without a flaw or sign of decay, and apparently as firm and sound as when first laid in the wall.

“When we compare the Dutch bricks with those made on the North river at Haverstraw, Croton and other contiguous points, the comparison is marked, and we can but be impressed with the marvelous improvement in the character of the bricks found in the massive edifices

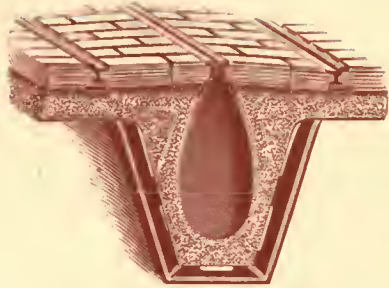
and magnificent structures of our metropolitan city, where, in the ceaseless activity of the building interest, one thousand millions are annually consumed. In Chicago we find the bricks produced in the early history of the city indifferent in appearance and below the average in quality, while to-day no city or section gives evidence of higher advancement in the art of brickmaking than is found in the sky-searching and almost incomparable buildings of that great city on Lake Michigan, whose growth is indeed the marvel of the century, or where the science of building in all the different and varied departments is advanced to a higher place than is to be found in the beauty, strength and adaptability and almost incomparable architectural designs of the great public and business structures and private residences of that wondrous city, whose magic growth and unquestioned prosperity are justly the pride of all Americans. The fine face-brick made in St. Louis, occupying a prominent place in the markets of the central and western states, is excelled by none; the same, in a measure, can be said of the bricks produced in Zanesville, Evansville and other points."

Brick manufacture is like chemistry, in the fact that each new day reveals some new idea. Only a few years ago brickmaking in the United States was in a primitive condition. Twenty years ago some improvements were effected in machinery, but for almost a decade such improvements were availed of by Philadelphians. Since 1881 the West has adopted the better features of the Philadelphia systems and added new ones until now, one would think, within the confines of Cook county, the brickmakers and brickmachine manufacturers had gained the summit of their art. Brick machinery has been manufactured since 1882 by the following, among other concerns: Chicago Ventilating Brick & Tile Company, 1882; Columbian Iron Works, 1882; Drake Standard Machine Works, 1884-7; Christiansen & Callaway, 1885; Acme Pressed Brick Company, 1885-8; Carman Brick Machine Company, 1888; Boyd's Brick Press manufacturers, 1889-91; Meyenberg, Spencer & Barkley, 1889; Robert B. Smith (agent), 1889; Charles Kaestner & Co., 1889; Kaestner, Charles & Co., 1890, and the Four-Pressure Dry Brick Press—the Rigg & Barton Manufacturing Co., 1891.

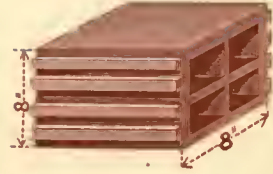
Frey's Acme special brick machine is one of the many pieces of brick machinery produced by the Frey-Sheekler Company, of Bucyrus, Ohio. The Boyd brick press, manufactured by Chisholm, Boyd & White, insures the manufacture of green bricks every day and night throughout the year, when the earth is not frozen. The new power repress, invented a few years ago by C. W. Raymond, of Dayton, Ohio, came in time to fill a long-felt want; so on to the end. Page after page might be devoted to modern inventions connected with brickmaking, and even then the list would not be exhausted.

Stoves for drying bricks, each 120x36 feet, were used at Glenboig, Scotland, in 1881-91, when the Dunnachie continuous gas kiln was introduced. The introduction of steam dryers has been successful in only a few instances. The economical use of steam and its proper circulation through the dryers appear to be the main difficulties. Yet the system is especially applicable to the manufacture of front, hand-pressed and steam repressed bricks, as the drying should be slow for clays which cannot endure the heat of furnace or fire. In the fall of 1889 a kiln was erected by the Grape Creek Coal Company, of Chicago, which gave

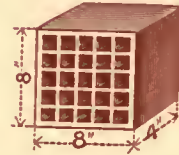
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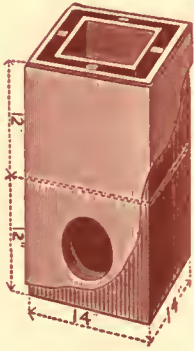
METHOD OF PAVING CABLE RAILWAYS.



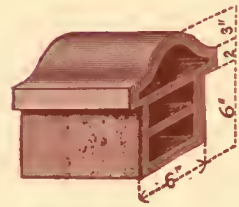
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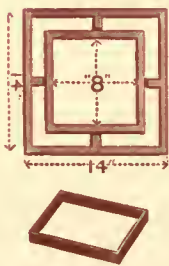
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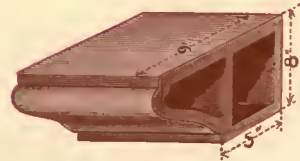
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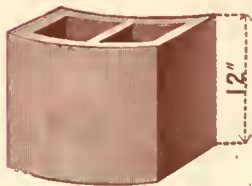
COPING TILE.



CLAY CHIMNEY FOR DWELLINGS.



CORNICE TILE.



CYLINDRICAL TILE CHIMNEY.



WATER TABLE TILE.

promise of abolishing forever the uncertainties of the old-time brick kiln. Prior to that time the brick burner was never sure of results. Under certain circumstances he would expect fair bricks, under others good bricks, and under others no bricks at all. The old system was not economical; it did not insure success; it was inharmonious. Why, even the size of bricks was uncertain, as every manufacturer had his own idea of molds and sizes.

In September, 1889, William H. Stoddard wrote on the subject, "Drying bricks artificially." He protested mildly against the system of drying-floors, on economical grounds, and against the rack and pallet system, on its disadvantages in wet and cold weather, and the fact that to dry fifty thousand bricks, storage capacity for three hundred thousand should be provided. He recommended a properly constructed artificial dryer for all large yards, as then the work could be carried on the year round, regardless of the weather. The workmen would be protected by shelter, a constant supply of bricks for the kilns would be insured, and the industry kept running every month. An artificial dryer, constructed on the tunnel system, with cars, rails and turn-tables, arranged so as to allow the raw bricks to be taken from the machine into the kilns, without rehandling until set in the arches of the kilns or tossed in for burning, saves time, labor, money, and yields a better and more saleable product. To accomplish this the clay-worker must understand the amount of heat the clay will stand in drying before checking; whether bone-dry or semi-dry clay should be placed in the kiln; whether the bricks will stand the great degree of heat or discolor, when in contact with the fire in the tunnel. Many other points must be closely observed by the maker, such as the furnace dryer, in connection with the tunnel, where the products of combustion do not come in contact with the bricks, which are dried by radiated heat.

The Purington brickyards in Illinois and Indiana employ crude petroleum as fuel, being among the pioneer users of such fuel in western brickyards. The bricks are set out, as in all temporary kilns; a burned brick casing of one thickness is built round the raw bricks, and the exterior daubed with mud. In constructing this, arches 24x12 inches at the mouth and fifteen inches high in the interior are built, with temporary furnaces three feet from the mouth. The whole system is simplicity and economy combined; while the burners, invented by J. B. McDonald, are quite in accord with the system. The expense of burning 840,000 bricks, in one clamp, by this method, equals about forty cents per thousand. The methods employed in the manufacture of pavingbricks at the Purington Company's yards, Galesburg, Ill., are described in the section of this chapter devoted to pavingbricks.

The paper read by William Roberts, of Trenton, N. J., on pressedbrick, in January, 1891, presents some historical facts relating to their beginnings: "The term pressedbricks was originally meant to apply to bricks that should be first molded and then repressed, as that has been the customary way of producing bricks heretofore specified or looked upon as pressedbricks. But of late years there has been manufactured throughout a large section of the country a large number of bricks, that, of course, might be termed pressedbricks. For instance, all the bricks that are made with what are called dry-clay brick machines, are certainly pressedbricks, as they are pressed into shape by the same kind of a process as are our

regular pressedbricks. The only difference in their manufacture is that in making bricks with dry-clay machines, the bricks are pressed into form direct from the raw material, while what we have always heretofore termed in the East as a pressedbrick has in all cases been molded into the form of a brick before going through the process of repressing. About the first pressedbricks that we know of as having been made in the East for the general trade in any large numbers were in the cities of Philadelphia and Baltimore, in fact, we do not think that previous to twenty-five years ago there was any place that manufactured pressedbricks outside of those two cities, that is, for shipping to the general trade. Of course there were some few pressedbricks made in a small way in other places for local consumption. About a quarter of a century ago the brick manufacturers of the city of Trenton, N. J., commenced to manufacture a few pressedbricks for the New York market, and they have been steadily increasing their output up to the present time. In the year of 1870 the city of Trenton produced about one million five hundred thousand of regular pressedbricks. But at the present time we produce annually about twenty million of pressedbricks, all of them being made in the regular way, by first being molded by hand, one at a time, and then repressed with hand presses. There are no statistics showing how many pressedbricks are made in other cities, but from the best information that we have been able to obtain, we judge that the city of Trenton is about the second city in the number made annually, of this particular class of brick, the city of Philadelphia being first and Baltimore third." The author did not notice Chicago and St. Louis, where pressedbricks of excellent quality are manufactured in great quantities. The Anderson Pressed Brick Company, the Hydraulic Pressed Brick Company, the Northwestern Terra Cotta Company and the Terra Cotta Brick Company have their works in this city, while all the other leading brick and terra cotta companies have their representatives here, such as the American Terra Cotta Company, the Tiffany Company, the Keystone Company, the La Salle Company and others, east, south and west of Chicago. Paving-bricks are referred to in the chapter on asphalt and other paving materials.

It has been asked how many bricks can one man set in ten hours, or the old working day. Where the bricks are tossed to the setter one by one, the number would be about ten thousand, but where four are tossed to the setter at once the number would reach about thirty-five thousand.

Ordinary bricks are about eight inches in length, and, with the mortar joint, about half that in width, so that each brick, on the flat, will give a horizontal surface of about thirty-two square inches, or four and one-half bricks will cover one square foot. As ordinarily laid, there are nine courses to every twenty-four inches, or four and one-half to the foot; four and one half courses, with four and one-half bricks to the course, will give twenty and one-quarter bricks to the cubic foot. Waste, cutting and closer joints will easily require an allowance of twenty-one bricks to the cubic foot, which will be found a very convenient figure for estimating the number of bricks required for a wall of given height and thickness, as it thus becomes unnecessary to find the cubic contents of the wall, but merely to multiply its face area, or the product of its length and height in feet by seven-fourths of its thickness in inches, which, as the thickness is always some multiple of four inches, is a very simple process.

Burned bricks are usually divided into three classes—arch, red and salmon—and, when made from the same class of clay the salmon bricks are the largest in size and greatest in weight, the red bricks are next, and the arch bricks are smallest in size and least in weight. The average weight of burned bricks is about five pounds, but individual weight depends upon and varies with the size, the amount of pressure to which the clay is subjected in tempering and molding, the heat received in burning, the class, whether red, arch or salmon, the kind, whether made by a dry-clay machine, a damp-clay machine, or hand-made. The average weight of a cubic foot of brick is one hundred and ten pounds.

Bricks impregnated with tar are said to be hard, durable and perfectly waterproof. The process of impregnation is extremely simple, ordinary bricks, or, still better, machine bricks, being boiled in tar for twenty-four hours. Bricks thus treated are claimed to be especially well adapted for paving workrooms, depots, etc. They are also recommended for the construction of sewers, cesspools, the insulation of foundation walls and similar purposes.

Enameled bricks have yet to be imported from France or England. American enterprise may apologize for this sad condition of affairs by the statement that the demand came up suddenly, and before its extent was realized, cargoes of enameled bricks were discharged at New York and other American ports. In May, 1891, a correspondent of the *Tribune* dealt with the question of the manufacture of this beautiful brick so ably that his letter is subscribed: "It is much to be regretted that such an important industry as the manufacture of enameled bricks has so far been overlooked in this country, to such an extent that it is a well-known fact that there is no American firm successfully making these bricks. It is worthy of note that only a few months ago the government advertised for contracts to furnish one hundred and fifty thousand enameled bricks for the Congressional Library at Washington, and failing to get any bids here, the order had to be sent to England. When the new tariff law was framed the ways and means committee recognized the advisability of encouraging the manufacture of these bricks, and added an increase of duty of twenty per cent on the old rate, making the present rate forty-five per cent ad valorem on the imported bricks. This being the case it would be interesting to see some enterprising company undertake this business and practically demonstrate at the coming World's Fair that Chicago is able to produce this article, so far exclusively in the hands of the foreign manufacturers. The demand for enameled bricks seems still to be on the increase, even at the high price of \$125 a thousand at the port of entry, and what is more remarkable is that the advance of duty from twenty-five per cent to forty-five per cent does not seem to have affected any decline in the use of them. This is accountable from the fact that for reflecting light and sanitary conditions there is no substitute equal to them. There is no questioning the fact that these bricks can be produced in Chicago just as well as abroad, and the inducements in profits are great at a cost of production of but \$25 a thousand. American enameled bricks could therefore be made and sold at such a reasonable price as to encourage a more general use of them and still leave a handsome margin of profit to the manufacturer. For public lavatories, halls, and cellars in private residences, and elevator shafts, where reflected light is needed, as well as a security against dampness, they could be most successfully used."

The Somerset Potters Works, Somerset, Mass., in June, 1890, completed the construction of a new enamel brick kiln from plans which were brought over from England. This is the first kiln of the kind built in the United States, and it is for the new branch of business which they have undertaken—glazed or enameled bricks. They are the pioneers in this line of brickmaking. The managers of the Somerset works engaged the services of a practical superintendent from Leeds, England, who has a good reputation, and this company looks forward to a large trade in glazed and enameled bricks, in addition to their regular business. The new plant is giving entire satisfaction, and the company is receiving many inquiries from other manufacturers, who have been very much interested in this departure from the old methods, waiting to see the outcome of the adoption of this machinery. Griffin Bros. & Miller, of Oaks, Penn., are the second manufacturers in the United States.

The first national convention of the National Brick Manufacturers' association was held at Cincinnati in September, 1886. W. A. Endaly, of the convention city, was elected president; J. A. Blafflen, of New Orleans, vice president; William D. Gates, of Terra Cotta, Ill., recorder; T. A. Randall, of Indianapolis, correspondent, and Adam J. Weckler, of Chicago, treasurer. From 1887 to 1890 conventions were held, officers elected, papers on important topics read, and much of all that is new in brickmaking discussed. The last convention was prolific in good results. Every matter of interest to the manufacturer was presented and considered, and members of the convention returned to their yards and offices with enlarged ideas of what they owed to themselves, to their employes and to the public. The fifth annual convention, held at Indianapolis in January, 1891, elected the following-named officers: Justus C. Adams, Indianapolis, president; Richard Smith, Omaha, Neb., first vice president; Samuel Pearl, Crafts, New Haven, Conn., second vice president; George S. Oldfield, Norfolk, Va., third vice president; C. P. Merwin, Berlin, Conn., recording secretary; Theodore A. Randall, Indianapolis, corresponding secretary, and Frank McAvoy, Philadelphia, treasurer.

Local brick manufacturers' associations have existed at different times. Efforts have been made to perfect such organizations; but the prevailing idea of perfection was of a selfish, rather than of a beneficent, character, and, for this reason, the great majority of brick manufacturers could not be drawn into the organization. There are in Chicago six yards, producing 266,000,000 bricks annually, and fifty-two smaller yards, producing 334,000,000. The Purington-Kimbell Company's yard produce 80,000,000; the Alsip Company's, 40,000,000; Hayt & Alsip Company's, 32,000,000; the May-Purington-Bonner Company's, 30,000,000; Wahl Bros., 28,000,000; Weckler's, 28,000,000, and the Pullman Company, 28,000,000. The Chicago Brick Manufacturers' association was presided over, in 1883, by Robert Tobin, with V. E. Hinchliffe, secretary; in 1884, by H. C. Hayt, with John McKenna, secretary; in 1885-8, by J. B. Legnard, with J. M. L. Sexton, secretary. P. Lechenstadt has been elected and re-elected president since that time with John McKenna, secretary, and L. H. Harland, treasurer. The latter has held this position continuously since 1883.

The North & Northwest Brick Manufacturers' association was presided over by A. J. Weckler during its existence. August Wehrheim was vice president; F. W. Sundmacher,

secretary; George Lill, treasurer; Thomas Moulding, Fred Zapel and John Labahn, trustees. The organization merited success.

In 1889 the National Brickmakers' association considered the question of adopting a standard size for brick, and in December of that year a name for each class of brick was suggested. The standard size of good, hard, common bricks, was placed at $8\frac{1}{4} \times 4 \times 2\frac{1}{4}$ inches, and of pressed or front bricks, at $8\frac{3}{8} \times 4\frac{1}{8} \times 2\frac{3}{8}$ inches. The nomenclature, as suggested in September, 1889, by the editor of the *Brickmaker*, does not appear to be considered in convention, but it may be said to have been adopted by the manufacturers. A brick made by hand and cut with water, was named water-cut; a brick made by hand molding, whether by hand, water, horse or steam power, was named sand-cut; a brick made by an Augur machine and pressed through a die, was named die brick, instead of the older names—mud brick, plastic brick and Auger brick. Any of the bricks named, when repressed by hand, should be known as hand-press bricks, and when repressed by steam, as steam repress bricks. The name green bricks was suggested for the squares of clay up to the time they are placed in the kiln for burning.

In January, 1891, there was read before the Brick Manufacturers' association, by S. K. Fletcher, of Indianapolis, a valuable paper on "Nomenclature in brickmaking." He pointed out the wide difference between nomenclature and vernacular, and was inclined to prefer the latter word as the better one; for, owing to the variety of local terms, there is no national system of nomenclature in brickmaking. He selected the Indianapolis vernacular and proceeding said: "To begin with our own locality here at Indianapolis, one of the first operations of the brickmaker is to dig his clay, or turn his clay in the field. The term field is used, as we can only work the clay eighteen to twenty-four inches deep, and it really requires a good-sized farm to run a brick-yard of any very great capacity; both terms, digging and turning, meaning the operation of spading over in the winter or early spring all the clay for the season's work, by first digging a trench, say two and one-half feet wide, and as deep as it will work, then another strip of similar width, throwing the top into the bottom of the trench first dug. This brings the bottom clay of the second trench on top of the first, and thus the field is dug over; the work being paid for by the thousand, counting sixty-four cubic feet to a thousand bricks. And no one in this locality would think of making bricks without first preparing his clay in this manner.

"For yards, molding by hand, the clay is carted to the pits by men called clay carters, or pit fillers, where it is soaked, meaning that water is applied, of sufficient quantity to thoroughly percolate through and dampen every part. After a sufficient length of time, it goes through the tempering process, which is done with a tempering or mud wheel, working on a shaft with a ratchet, which causes it to travel in and out until the clay has been transformed into the perfect mud state. Then the pit is smoothed or slicked down with a board, called a slicking board, hitched to the wheel-shaft, on which the driver or pit man will ride around a few times, until the surface is as smooth as a cement walk; this prevents the pit drying out. The mud is then taken to the table on a mud-barrow, by a mud-wheeler. The molder sands his table and then rolls his walk, by which is meant he throws or sprinkles sand on the walk

to prevent the mud sticking, and with his hands he cuts from the mass in front of him a sufficient quantity for one brick, rolls it on the sanded table until he gets it into the proper compact form, and then with a quick firm movement drives this mass into a mold with such force as to fill every corner. When all are filled, he caps the mold with his bow, which is a short, stout bowed piece of wood, with a steel piano-wire string. The molds are then taken to the yard by the off bearer, who dumps them. To give a smooth surface to his yard before dumping the bricks upon it, he lutes it with a scraper, of proper form, with a steel-cutting edge, called a lute. On the Hudson river, all the bricks dumped on the yard have the rough edge, caused by the vent in the mold, pressed down smooth by a boy with a tool, called a stamper, made for the purpose. They call it patting or stamping them. When sufficiently dry to touch without making finger marks, they are edged in some localities, and turned in others, this turning them up on edge being to facilitate drying. When dry enough, they are hacked on hacking boards, which are one and one-half to two inches thick; here the bricks complete the drying, if not already for the kiln. The hacks are protected from the weather by splash boards set up against the sides and caps on top.

“The man conveying the bricks to the kiln is a brick wheeler, wheeling on a brick-barrow. On the Hudson river, where the bricks are shipped to market by boat, there is a green-brick wheeler and a burnt-brick wheeler. The man placing the bricks in the kiln is a ‘setter’ the country over, and the man passing the bricks from the barrow to the setter is a brick tosser. The men working in the kiln after burning are called kiln-shed men in one place, tossers out in another, and brick pitchers in others. In kilns we have scoved in one place, and the cased up in others, they being one and the same. The kiln being first set under the kiln shed, so many stretchers wide, meaning the width, is a given number of bricks lengthwise, and so many bricks high, meaning so many bricks on edge. The setting is benches between the arches, almost universally. The projecting courses to form the arches are overhangers in some places and jets in others. There are two-brick benches and three-brick benches. Above the arches, the setting is generally three on three, when setting in this way; every two bricks are called a topping in some localities; in some places they are set diagonally across each other, called skintling. The kiln is finished out on top with plating in most places, but in some it is called flatting, and in others splatting. It is generally double; the first course laid with green bricks flat, but loose, and the second or top of soft or salmon bricks, tight.

“The casing or scoving which forms the outer wall of this class of kilns is laid up as the setting progresses, usually about twelve inches thick at the bottom, and tapering to four inches at top. At the bottom the eyes are formed, which are the openings through which to fire the arches. Another small opening is formed through this casing just opposite the top of each arch, called a peep-hole, I think, in all localities. Danbing the kiln, is to plaster it all over with soft mud, making it air tight, as nearly as possible. Propping the kiln is bracing it to prevent the expansion by the intense heat throwing it open.

“The first thing in burning a kiln is to water-smoke it, in some sections, drying off in others, and steaming in others, all meaning to absorb thoroughly and dry out what moisture

remains in the bricks by slow and careful firing, which usually requires from three to four days. And right here let me say that I consider this one of the most important parts of burning. I believe that more bricks are ruined, more money is lost by improper water-smoking or drying off than by anything else, and it is caused by too much haste. 'Slow and steady' should be the motto from beginning to end in burning bricks, and when the kiln is blowed out, and every eye closed and daubed, and every crack that has opened in the casing by the heat is plastered over, let no man prevail upon you to give it air until it has sufficiently cooled to thoroughly anneal or temper the bricks. Cold air at this time can do an immense amount of mischief.

"Burning in the ordinary kilns with wood, firing for the heads, is called mouth-firing, and for the center is called sliding. Firing with coal, baskets hung at the mouth of the eye, are used with short grate bars. What are called clamp kilns, or clamps, are kilns built with permanent walls. Patent kilns are all built with clamps, or permanent walls with furnaces on the outside, and it is the manner of construction of these furnaces in which the patents are claimed. The old Wingard kiln was the first patent kiln that I know of in this country, and about all the others we have now are offshoots from it. The great beauty of kilns of this character is that the furnace being entirely outside it becomes a caloric kiln. Cold air cannot reach the arches, hot air only reaching the inside of the kiln; and with judgment and care there is no reason why good bricks should not be the result of burning in any of them. In burning, the kilns are designated as heads, quarters, middles and centers.

"On yards running by machinery the terms vary. On one large yard down in Connecticut, where the clay is deep, it is thrown down by dynamite, discharged by electricity. And this yard of Merwin's is run with the system of a First National bank. Here is one man called a bank boss or foreman of that department. The man who attends to the blowing-up business is a bank borer. And the men who cart the clay to the machine are bank-cart men. The man who attends the pugmill is called a pugmill tender; on other yards he is a pugmill man, and at other places he is simply pugger. Where the clay is shoveled direct from the soak pit into the machine, the hands are called pit men, also pit shovelers. Then there is the sander on yards making in sanded molds. The man who stands in front of the machine and receives the molds as they come out is called a striker in one place, a striker-off at another, also a molder and a capper at others. The pallet boy is the boy who places the pallets on the dump table. The dumper is the man who receives the molds from the striker and dumps the bricks upon the pallets. The truckers, also called truckers-off by some, wheel the pallets to the yard for hacking, or to the racks for stacking.

"Hacking pallets are usually conveyed to the kiln without the bricks being removed, the pallets with the bricks upon them being hacked on brick barrows arranged for the purpose, or upon mule trucks. Where the rack system is used the bricks are generally taken off the pallets and hacked on the barrows or mule trucks to be conveyed to the kiln. Down in New Orleans, the place where the water runs away from the river, bricks too are made in very great quantities. The Blaffer Brick & Lumber Company has a yard that is a model of

neatness. This is a river yard, and the clay used by such yards is called Batture. It is the silt which floats down the river during the high water, and settles in pockets, or eddies formed to catch it. When the water recedes this dries out and is then carted outside the levees into great banks ready for use. A brickyard has been run at this same place for nearly forty years. Each year the river is sure to rise, and the silt to come down, and the Batture formed for another season's work. Back from the river the clay is what is called buck shot, because when dug it breaks up in little hard square pieces.

"The bricks at New Orleans are graded, first as foundries, which are the softest, and used for lining crueibles; then the salmon for chimneys. They call their best bricks benchbricks, and all the others clinkers, which are used for foundations. On the old yards around New Orleans they use mud or tempering wheels that would be a curiosity to a northern man. They are fully twelve feet or more in diameter with a broad solid tire and rim. The clay is only about six or eight inches deep in the pit and is simply mashed in tempering it. The shaft on which this wheel runs has no ratchet, and the wheel is made to travel in or out by being thrown off of a center at its axis. On these yards they use three brick molds, dumping on narrow pallets split out of hemlock. On one of these yards run by an old French Creole he told me that his pallets had been in use for over thirty-five years.

"Down in the Old Dominion at Norfolk, you will hear the *ante bellum* vernacular used, and whenever I think of Norfolk it reminds me of the sign hung in front of a restaurant on one of the back streets of New York, which said: 'This is the place where good oysters is got.' However this vernacular is fast changing, but to this day the work is carried on by song, each man or boy sings as he goes through with his work or task. After 'de wah' the colored people did task work; now they take stints. They used to cut the clay by tasks, so many spits; now so many yards. They turned a walk for the bricks, but now that the machine has come in the walk is out of use except for the Old Black Joes. In burning, the old colored man glistened his kiln if not settling to suit him; now he rustles it if he wants more heat. The old man off-bore the bricks, the young man carries or trucks them off. The old man done finish his day's work, the young man gets in the day. The old man was done on Saturday, the young man is through the week. The old man on Saturday received his rations and went away happy, singing a hymn; the young man presents himself as promptly for his pay as though his skin were white, and counts his money to see that he has not been cheated.

"In most places bricks that come from the machine imperfet are called muleys, and those that are left on the yard as unfit to go into the kiln are called old hides. If some part of the kiln gets too hot you are apt to have clinkers, or bricks melted together, or vitrified. Arch bricks which are blackened on one end are called nigger heads. In the yards where coal dust is used, if it is not properly distributed and mixed, some bricks will be swelled or puffed out; these are called lammies. The terms for the different bricks in the kiln almost all over the country will run as arch, or eye bricks, bench bricks, back stretchers, face bricks, pavers, select hard fronts, light fronts, alley fronts, salmon, soft, and headers which are the bricks up the heads, one end hard the other salmon. Kiln-run and merchantable mean foundation,

fronts, and flue, sufficient for building, but in this locality do not mean the entire run of the kiln. Pavers do not belong under that head. In Cambridge, Mass., the terms up, down and hard mean the whole kiln except the very soft at the top. Where coal dust is used these heads are made especially with an extra quantity, and burn hard but dark. In Cambridge there are six yards making over sixty million sand-molded bricks per year, and three other yards making over eight million water-struck or slop bricks. The clay for making these slop bricks is taken direct from the bank to a drying yard, torn to pieces by a harrow when dry, is rolled and harrowed again, then goes to a soak pit directly behind the machine. This is the only place I know where slop bricks are made to any great extent at the present day.

“In burning with natural gas I have been unable to get hold of any new terms, except in one locality where they go through with a performance at the end of the operation, just before closing the kiln, which they call blasting. It is sort of a farewell. They turn on a full head of gas and shoot the flames fifteen to twenty feet out through the top of the kiln, and a blasted performance I call it. In some localities they blast every hour. In another place where they make splendid burns, the flame is driven up until, just before closing, it comes through the top in little long flames, say a foot high, called candle sticks, and when the candle sticks are well through they close her up.”

In January, 1891, a report on this subject was made to the convention of brick manufacturers by D. V. Purington, W. A. Eudaly, and William H. Brush, a committee appointed for the purpose in 1890. Their efforts were not satisfactory to themselves, and hence they recommended the appointment of a second committee to continue the work. The report as made by them, reads as follows:

“We find that many of the same kinds of bricks are known by a great variety of names, not only in different but often in the same localities. We will therefore describe some of the leading kinds of bricks, submitting at the same time the names applied to each with recommendations. The first division will be as to the degree of hardness.

“First. Bricks not hard enough for the outside course of outside walls are variously known as soft, salmon, backing-up, pale, light, chimneys, filling-in, inside wall and foundry bricks. As anything softer than salmon bricks is not, properly speaking, a brick, we recommend that all bricks not hard enough to stand exposure in the outside of buildings be known as salmon bricks.

“Second. Bricks burned hard enough for the outside course of outside walls, not selected, are known as hard, common, building, paving, hard building, outside, hard red, strictly hard, select hard, rough hard, hard washed, kiln run hard, common hard and kiln run hard, one-half smooth, one-half rough. We recommend that all bricks burned hard enough for the outside walls of buildings, but not selected or graded, be known as hard kiln run.

“Third. Bricks set from the top of the arches to the bottom of the kiln are known as arch, bench, eye, overhangers, foundation, cistern, cellar and hard-rough. We recommend that all bricks set in the arches or benches, which are discolored, broken or twisted in the burning, be known as arch bricks.

"Fourth. Bricks selected for the fronts or the outside course of outside walls are known as fall, outside, select common, reds, hard fronts, fronts, veneering, smooth hard, straight hard, common fronts, light hard, chimney tops, liners, select, select reds, headers, stretchers, dark fronts, stock, select hard, side and back walls, and croton-front. We recommend that common bricks selected for outside walls of buildings be known as front bricks; No. 1, light burned; No. 2, medium burned; No. 3, hardest burned.

"Fifth. Bricks used for sidewalks are known as pavers, sidewalk, hard, selected hard, hard-burned and yard pavers. We recommend that such bricks be known as sidewalk bricks.

"Sixth. We recommend that sewer bricks shall mean good, straight, hard-burned bricks.

"Seventh. We recommend that foundation bricks shall mean good, hard, well-burned but not selected bricks.

"Eighth. We find that all the bricks in the kiln (not strictly soft) are known as kiln run. Merchantable—one-half select and one-half soft. Merchantable—one-third select, one-third hard and one-third soft. Building bricks, common building, average bricks, and two-thirds front, one-third salmon. We recommend that all the bricks in the kiln not strictly soft, taken together, be known as merchantable bricks.

"Ninth. We find in two or three localities bricks molded in sand by machine or hand, not repressed but handled with extra care, burned in the best part of the kiln, and well selected for fronts are called headers, stretchers and croton fronts. We see no reason why those bricks should not be classed with common bricks and known as front bricks, which we recommend.

"Tenth. We recommend that all the bricks that are set in the kiln when burned be known as kiln-run bricks.

"Eleventh. All the bricks left in the kiln after the front bricks, sidewalk bricks, and sewer bricks are taken out of the kiln are variously called inside bricks, sewer, cistern, inside walls, double coal, shrunkery, clinkers, rough kiln run, and backing up. We recommend that all such bricks be known as rough kiln run.

"Twelfth. Bricks made especially for the fronts of buildings by repressing or dry pressing are known as pressed, repressed, stock, fronts, sand pressed, dry press, line brick, stretchers, headers and face. We recommend that all bricks made by either the repress or the dry-press process, and selected or graded for the fronts of buildings be known and designated as press bricks. We further recommend that press bricks be graded as follows: First, as to color. The numerals No. 1, No. 2, No. 3, No. 4, etc., shall designate color; No. 1, being the lighter shade, and No. 2 the next shade darker, and so on for any number of shades. Second as to quality. Press bricks shall be designated by the ordinals, as first grade, second grade and so on. We then have press bricks, No. 1 first grade, No. 2 first grade, and so on for any number of shades. No. 1 second grade, No. 2 second grade, and so on for any number of shades. No. 1 third grade, No. 2 third grade, and so on for any number of shades or qualities. The numerals always denoting the color or shade and the ordinals always denoting the grade. Extremely light shades may be known as No. 0 and No. 00. We further recommend that all dry-press or repress bricks, not selected for fronts, be known as common bricks, and be subject to the same classification.

"Thirteenth. In many localities the term stock brick is applied to a brick molded either by hand or machine in rough, coarse sand, and repressed without rubbing, so as to give the brick a rough sand finish. We recommend that such bricks be known as stock bricks.

"Fourteenth. We find a great many varieties of names applied to molded or ornamental bricks, among which are the terms stretchers, headers, bay-windows, trimmers, cornice, etc. We recommend that bricks other than square bricks be known as ornamental bricks, for the various kinds of which the committee is not ready to suggest a nomenclature.

"Fifteenth. We find that the terms heads and stretchers are often applied to the manner in which the green bricks are set in the kiln; as you enter the kiln you see the ends of the headers and the sides of the stretchers.

"Sixteenth. Platting, splatting, and flatting are terms applied to one or more courses of bricks placed on top of a green kiln to hold the heat when burning. These bricks are often set on edge or laid singly flat as in paving, and often two courses are laid flat one above the other. We recommend that all bricks used to cover the top of a green kiln set for burning be designated as platting."

Common bricks are hand-made, dry clay, tempered clay, soft mud and stiff clay. Changing into a higher order, the processes of manufacture are known as front, hand-pressed, steam-pressed, repressed, ornamental and enamel bricks; again as fire bricks, paving bricks, roofing tiles, flooring tiles, art tiles, mosaic plates and imitations of inlaid work, and, lastly, as terra cotta. Water and drain pipe, referred to in the chapters on water-supply and general drainage, belong, in fact, to the brick or terra cotta family, as well as all work in baked or burned clays. S. B. Thorpe, in his paper on early brick plants, says: "It can truthfully be said that there are no 'soft spots' in brickmaking. Modern machinery, while it has accomplished much in increasing production, has done but little to alleviate the actual hard work necessary to the production of a kiln of bricks. None but the hardy can endure the labor. Whether it be 'in the bank,' 'shoveling pit,' 'striking,' 'trucking off,' 'wheeling in,' 'setting,' 'burning,' 'loading' cars or wagons, the employe is constantly on his feet, either lifting or carrying a burden that would tax an athlete. The earliest kilns were merely made of from fifty to seventy-five thousand bricks. Rarely did a proprietor dare to make a hundred thousand. Even with this small quantity, men were from three to five years in disposing of it, so slow were the sales. Unless the maker had sufficient capital to lock up the greater portion thereof, it became him to invest sparingly in hired help and fixtures, hence, as has been said, bricks were made when one could do nothing else to advantage. Before 1843 all green bricks were carried off the yard to the kiln by hand. Twelve were considered a load for a man. Tucking ten of these carefully under one arm, and with two in the other hand, he trudged back and forth, carrying them under cover. On rainy days and sometimes nights, he 'set' them in the kiln. Wheelbarrows were not introduced into the town until 1843. William Devine was the first owner. He had two made for his yard, but, like every other labor-saving device, these barrows were looked upon with suspicion. Orrin Warner, more than once, was heard to say he could 'mold more bricks in a day than could the Hall machine,'

and Col. Eleazer Warner just as stoutly declared he could carry more bricks in his arms off the yard, and easier, than one could wheel in a barrow. It is not said that either of these irascible old gentlemen ever made a test of their claims except with their tongues. The 'season' closed in the early fall; October was the usual month. The entire summer's product was set in a single kiln. Then came 'burning time.' This was a hilarious event. It looked forward to with great interest by certain of the community as an occasion when rum, if ever, was needed to successfully do the job. Everybody then connected with the kiln was happy but the owner of the property; he was commonly overwhelmed with anxiety lest his volunteer help become so utterly drunk as to endanger his kiln by neglect. Such instances were not infrequent. 'Boss burners' were in great demand by proprietors of yards, and as the supply of the former was limited and the needs of the latter urgent, there was much rivalry and backbiting over their possession. When one of these 'professionals' was secured there was no positive assurance success would attend his efforts. A 'good burn' fifty years ago, and even later, was a rarity. It seems more to have been the result of luck than calculation. No attention was paid to the elements of clays. Chemical agencies were unknown. Fire was simply set to the dried clay and held for such period as each 'boss' considered sufficient. If chance gave a good result the 'burner' was looked up to as a wonderful man; on the other hand, if the kiln proved 'soft' or 'swelled' he was almost as wonderful, for he could argue to a hair's breadth that no human being under heaven but himself could have gotten anything at all out of it. Nowadays the foreman who makes a 'poor burn' receives his death warrant. Too much is involved in the necessary seven or eight days' firing of kilns, containing from half a million to frequently a million of bricks, to leave anything to luck. Everything is most carefully studied, every move most cautiously made, liquor is prohibited, and none but experienced assistants allowed. As a consequence little uneasiness is felt concerning results, and the quality of kilns may be often predicted while they are white with heat.

"To return to the steps of manufacture. The invention which was attached to the upright 'pugmill' was known as the 'Hall machine.' It was not automatic in action. Its molds were filled by hand-pressure and thrown out by a system of levers requiring considerable muscular exertion, but so much was it an improvement that it came into general use between 1850 and 1860. Erus Bishop, himself a practical brickmaker, corrected several defects in its construction and wonderfully enhanced its value. There was no patent, and he finally came to take up the manufacture of these machines in the winter seasons. During the war he had an extensive trade, frequently disposing of them for a hundred dollars apiece. The next advance was in the development of a complete automatic machine, such as can be seen at present in modern yards. Into this the raw materials, water, clay, sand and coal, are fed in suitable proportions, from which emerges the steady delivery of three thousand to four thousand finely shaped bricks per hour. Each mold as it is forced from the press is seized and 'dumped' upon a short, narrow board called a pallet. These pallets, with their contents, are placed upon double-decked trucks, wheeled to their places and placed in immense racks to

dry. Here they remain for several days, until sufficiently hard to 'set.' At this stage the sun-dried bricks have attained considerable cohesiveness; they may be handled roughly and will resist great pressure. They are then removed from the pallets and wheeled to the kiln sheds. The old-fashioned kilns were pigmies in comparison with those of modern make. Formerly it was not customary to build them over twenty-one or twenty-two bricks in height (height being determined by the width of the bricks, as all are set on their edges). This did not place the top of the kiln much over eight feet from the ground. In the day of Ezra Stiles, probably the oldest living brickmaker, an 'arch' rarely held over nine thousand bricks. He vividly recalls one occasion on which he 'set' two and a half arches in one day, receiving two dollars and a half as his wages. A few years later the height of the kilns began to be increased, though with misgivings that the fire would never work its way through to the top. Experience proved the contrary, and they have steadily been mounting up until it is thought about the limit in fifty has been reached, not but that the fire could be carried higher, but the enormous weight on the bottom courses begins to be felt."

Following the policy of permitting the expert brickmaker to speak of his trade, the following paper, delivered by W. H. Alsip, before the National association at Philadelphia, in 1889, is given place. It tells of the stiff-clay process in the manufacture of bricks and of the introduction of machinery:

"For forty centuries little progress has been made in the science of brickmaking. More has been done during the past twenty-five years than in all the preceding ages. Guizot has said that 'Providence takes a step, and ages have rolled away.' Surely the ceramic art closely resembles Providence in this respect, for many ages rolled away before it took a single step in advance since the time of our forefathers of 2000 B. C. But after these centuries of sluggish inactivity the indications are that this trade, so long stationary, is about to emerge from its primitive crudeness and take its place, where it belongs, among the higher manufactures of the world. The art and science of clay-working seems to be in a fair way of being more fully comprehended by man, instead of being, as in the past it has been, a crude science, but little or imperfectly understood. In no trade is there more activity or energy displayed than in the brick business at the present time. The patent office will testify to an almost endless stream of applications for patents on devices for working clay. One of the first results of this new learning was the machine for making bricks by the stiff-clay process. The writer can in no better way show what a revolution these machines have worked in some parts of our country than by reciting the history of their advent and growth in the city of Chicago, where, up to ten years ago, we were plodding along contentedly, on temporary yards, doing our work with horses and mules, and employing a man for every thousand of bricks we made on the soft-mud machines. Our yards were equal to our wants, for we were blissfully ignorant of any better way. In an evil hour our friends of the firm of Purington & Kimbell came to Philadelphia (just about ten years ago now) and imported a stiff-clay machine and erected it in Chicago. We called it a hurdygurdy, a sausage machine—in short, all the vile and belittling names we could command, but it went right ahead, attending to its business and

making good bricks. We predicted failure to the machine and to its importers (our wishes were father to our predictions), but it went right on making money for its owners. We made in Chicago then the arguments you soft-mud men are waiting to make against these bricks when this paper is finished to-day. We know your arguments by heart, every one of them; we used them all ten years ago ourselves. But villifying, abusing, vituperating, calling hard names, and reasoning from false bases soon became tiresome, even to the most energetic of us, and, imitating Pope in his immortal lines about vice, 'We first endured, then pitied, then embraced.' One after another of us selected large sites for yards and quietly ordered stiff-clay machines. We pulled in our objections, swallowed our arguments, and got into the stream of improvement, until now in the city of Chicago a veritable revolution has occurred, and the vast majority of the five hundred millions of bricks made for that market is made by this once despised method. The soft-mud machines are now running only until their present sites are worked out, when their owners also will adopt the improved methods. We predict that another decade will find the soft-mud machine a thing of the past in the Garden City. It will have taken its place among the historic relics of our primitive brickmaking. Has this revolution come about without good and sufficient cause? Impossible! There must have been some potent reason for us giving up the old style. We were just as patriotically inclined toward soft mud as the most captious and least progressive of you. We believed in that process because we thought it was the best and would so prove itself in time; believed in it because our grandfathers believed in it, because we had been raised to believe in it; but we yielded to the logical eloquence of dollars and dimes, to the superior excellence of 'stiff-clay brick,' and to the superiority of the stiff-clay process. What are the advantages of this over the hand- or mud-machine process? Odious as comparisons may be, we are compelled to draw our conclusions as to the best method of manufacture by a comparison of the various styles in vogue at the present time, and inasmuch as the dry-clay process, in the opinion of the writer, is not ordinarily well adapted to the manufacture of common bricks, we are of necessity compelled to draw comparisons between the soft and mud method (either hand or machine) and the 'stiff-clay process.' This paper will consider only end-cut bricks, as we regard side-cut bricks as in no way better than the soft-mud bricks. The greatest excellence of the stiff-clay bricks is secured by the way in which it is forced through the forming die and in its being cut off at the end. The advantages of these bricks are: First, they are smoother and more uniform in size. The smoothness results from their being forced through a smoothly polished die. They are more uniform in size because, having but little water in them, they do not shrink as badly as soft-mud bricks do in drying. This smoothness and uniformity enable the mason to make a smoother and more perfect wall. Second, they are stronger in resisting a crushing strain, and are very much stronger in resisting the tendency to crack by the settling of the foundations of heavy buildings. The writer could not find in Chicago a machine that would give the exact number of tons pressure exerted by the machine, but made two tests in crushing brick, as follows: A soft-mud, a dry-pressed, and a stiff-clay brick of uniform hardness were put under a hydraulic press together, sheets

of lead being placed between the bricks to give them an even bearing. In each of these tests the soft-mud brick yielded first, but was followed almost immediately by the others. The dry-clay brick used was one number harder than one of the same make which had withstood a pressure of over two hundred and fifty tons. Taking this as a basis, it was estimated that all the bricks stood nearly or quite that amount. The writer concluded from these tests that it might be stated as a rule, that bricks made from the same clay and of the same degree of hardness will, in their ability to withstand crushing strain, vary as their weights; that is, a brick weighing five pounds will stand a quarter more strain than one weighing four pounds, provided the bricks are made from the same clay, are of same degree of hardness, and have the same number of square inches of surface. The bricks tested showed a resisting power about two and one-half times as great as English bricks, and one and one-half as great as those tested by the government for the Pension Bureau building at Washington.

“The cracking of the walls of buildings is caused by the settling of the foundations of parts of the building. Suppose the corner of a building begins to settle; the usual result will be a large crack not far from the corner, the crack being caused by the bricks and mortar being pulled apart by the great weight thrown upon them by the settling of adjoining parts. The point of breakage is a fulcrum and the settling wall is a lever; now, if the bricks would refuse to pull apart, and would stand the enormous weight thrown upon them, then the foundation would settle at the point where the break usually occurs, until the corner would again receive its weight and the foundation would be uniform again. It is in such cases that the stiff-clay bricks are pre-eminently superior to all others, and fewer cracks can be found in ten and twelve-story buildings constructed of these bricks than in four and five-story buildings made of soft-mud bricks. Why is this so? Because of the very constitution of these bricks; because the grain runs lengthways of the bricks, as in a timber, rendering it easily split, but almost impossible to break in two. They are strongest in the direction in which great strength is required, whereas in the soft-mud product the grain runs crossways, rendering them weakest in the direction which is always most severely taxed. For building strong walls the stiff-clay bricks are incomparably the best.

“One of the greatest advantages of the stiff-clay process is the small percentage of waste from breakage of bricks. The same characteristic, viz., the grain running longitudinally, which renders these bricks strong in the wall also operates to make less waste in handling them. Let us illustrate the strength of brick by a comparison with lumber. Saw a 2x4 scantling up into pieces eight inches long. Now saw from a 2x8 plank some pieces four inches wide. The pieces sawed from the 2x4 will represent the stiff-clay bricks; the pieces from the 2x8 plank will represent the soft-mud bricks. No one will deny that the pieces sawed from the 2x4, whose grain runs lengthwise, will stand much more rough usage than the pieces from the 2x8 plank, whose grain runs crosswise. As in lumber, so in clay; breakage will go with the grain. In our own experience the percentage of breakage would be about as one is to five in favor of the machine brick, for that reason. When the writer was connected with a firm that made both styles of bricks, the soft-mud bricks remained in the

sheds until the others were all sold before he could induce any of his customers to take them at twenty-five or fifty cents less per thousand.

“It is safe to say that bricks can be made from ten to twenty per cent cheaper by this method than by the old, the saving being in the number of men dispensed with. It costs just as much to set, burn and deliver one kind of bricks as another of the same clay; the great saving is in taking the clay from the bank, making it into bricks, and putting the bricks in dryers or in hacks. Fully one-half the labor can be dispensed with. Thus, a profit is assured where a positive loss might occur in manufacturing soft-mud bricks. It is, furthermore, a much more pleasant way of doing business. There are not so many anxieties, perplexities, and cares. Everything is or can be safely housed in, and if a storm occurs one is not in danger of losing the profits of an entire season by having several hundred thousand bricks spoiled. The yard can be made compact and convenient. It is doubtful whether any one would return to the old style, even for the same profits, after once having tried the new. Now, let us see what objections have been urged against these bricks.

“It has been urged as a disadvantage of these bricks that they are too smooth to make a good bond. If these objectors will lay pieces of plate glass in mortar or cement, they will find as good a bond will be formed as the most finical of them could desire. Did they ever try to scrape mortar from a window-pane? If they did, they found it clinging to the highly-polished surface with great tenacity. No one has attacked pressedbricks in this respect, although they are much smoother than the stiff-clay common bricks. Bricks formed by being forced through a mold or die have, necessarily, a grain running in the direction in which they are forced through the forming die. In side-cut bricks, the grain runs vertically, as in soft-mud bricks, which receives its grain from being forced into a mold. In end-cut bricks the grain arranges itself longitudinally. This is the great imaginary defect so often repeated and so often harped upon by the enemies of the stiff-clay bricks, by them called the core or laminations. Superficial observers and people of inferior reasoning power have jumped at the conclusion that this is a defect, whereas it constitutes the chief virtue and paramount excellence of the bricks, rendering them infinitely stronger in the wall than any others. We do not hear this objection urged in Chicago as we formerly did, for the stiff-clay bricks have stood the test of ten winters in all manner of buildings in that capricious, rigorous, trying climate, and have proven their ability to stand frost to the satisfaction of everybody. They are as indestructible as time, as eternal as this round globe itself. Of course, a soft brick of any kind manufactured will not stand freezing, and much damage is at times done to the reputation of good machines by men who deliver too many soft bricks to a job. The stiff-clay bricks manufactured for the Chicago market are almost invariably run through granulators, then through heavy rolls set about half an inch apart. Then, in all our machines there is a ponderous shaft studded with numerous tempering knives, and through all of these the clay has to pass before being forced through the die. If these are not well tempered, please let us know what will temper them. Not a lump as large as one's finger can get through without being crushed. No other bricks are as thoroughly tempered as these.

“The fitting up of a modern brickyard with improved machinery and the necessary devices for manufacturing bricks at the lowest possible prices is attended with an outlay of money that would appear to be absolute waste to a brickmaker a few years ago; for, in building a yard to possess any degree of permanence, a large tract of land is necessary; this, in or near a large city, is exceedingly expensive. Having bought high-priced land, it would be foolishness to buy anything but the best machinery obtainable. The amount of money required to buy machinery for mining, elevating, granulating, crushing and tempering the clay and making it into bricks, is something that would startle the old timers; and when it comes to building artificial dryers we can spend all the money the most luxurious of us might desire to part with. But this very matter of expense, so frequently offered as an objection, is having a beneficial effect upon our trade. It has brought, and is bringing, into our trade a new class of men, bringing in men of greater means, of greater intelligence, of more mechanical ability and engineering skill. For the first time in the history of our business has there been a place for the employment of such men. The inventor, the mechanical engineer, the financier can find in the brickmaking of the new era as large a field for the exercise of their respective abilities as in any other trade or occupation. The day is about past when any of us need hesitate to say we are brickmakers, for surely the days of the clod-hopper in the brick business are numbered in our large cities. In the matter of a general plan of a yard for making bricks by the stiff-clay process, of the mining, elevating, granulating, crushing of clay, of the various machines in the market at the present time, this paper has nothing to say, preferring to clean up popular fallacies and misunderstandings in regard to stiff-clay bricks and to show their great superiority over all others.

“The dry, or semi-dry, clay brick men may feel slighted at not being brought into comparison with the other styles of common brickmaking. While we regard that process as incomparably the best for the manufacture of pressedbrick, both in quality and cost, we do not think that such machines in rough clay could successfully compete with soft-mud machines in economy of manufacture; therefore they could not be in the race with stiff-clay machinery at all. Bricks would cost more to make by this method, and in burning, the expense would be very materially greater.

“The soft-mud process will never go out of existence completely. There are some loose, friable, crumbly clays which require soaking before being made into bricks; such clays can in no other way successfully be made into good bricks. In small towns, where the demand for bricks is small, the hand-molder will always be found; the primitive outfit, the flat pit, the sanded floor, the temporary kiln-sheds, in fact, the very brickyard of our ancestors will still exist, a veritable rustic among farmers. There the old horse of Brother Gates will still go round, and the yellow clay will continue to be ground. In this restless, nervous age, when every vocation is crowded by men who are ever on the alert to discover some new means of making better bricks for less money, it behooves us to keep awake. There is no room for sentiment; we must be open to conviction and ready to adopt what is to our advantage. Let no one suppose we have reached a limit to our progress. We are just beginning to move,

and each year will find us accelerating our speed. We are in our infancy in brickmaking, and it is safe to predict that during the next five years we will make as much progress as has been made in all the past. We will be called upon in the next few years to decide on the merits or defects of a great many brickmaking devices. It will stand us in hand to be conservative in adopting new machinery. Very often the best thing to do will be to wait—to do nothing. There will always be plenty of reckless men to go ahead and try to revolutionize the brickmaking world by visionary methods. Let us not be too easily led into adopting untried schemes, but when any new and great improvement is made, it behooves us, if we value dollars, not to shut our eyes to our advantages, but to be ready to adopt any device that will make better bricks and save money. While we have said considerable about soft-mud bricks in this paper, we wish to state here that we have no quarrel to wage against our brothers of the soft mud. If they are satisfied we ought to be contented. We are here as graduates from that style of manufacture to tell our experience, to maintain, substantiate and show on paper our convictions formed from personal experience in practical brick-making. If the brickmaking concern with which the writer is connected has had some measure of success in the past, it has been secured by the closest study of methods and appliances, by the closest attention and untiring personal supervision of the proprietors.

“The proprietor who neglects his opportunities, who neglects the little details of his business as of no consequence, whose soul is not in his work, who is not ambitious to adopt the best means of making the best brick in this ambitious age, will meet either with but moderate success or absolute failure.”

Another valuable paper was read before the convention of January, 1891, by Charles T. Davis on the brickmakers' fuel of the future. He stated that in all the branches of manufacture “requiring high, constant heats the cost of wood, coal and other solid fuels forms a considerable part of the cost of production. Where coal is required to be hauled in carts from the wharves, or from a line of railway to the brickyard, located a mile, more or less, from the places where the coal is received, the cost of handling, haulage and waste is an important item. Added to these costs, the deterioration of soft coal under atmospheric influences and the waste from imperfect combustion and from the particles which fall from the grate bars into the ash pits, all eat a large hole in the brickmakers' profits. For more than six thousand years bricks employed in engineering and architectural construction have been burned either with coal or wood in open-top clamps or kilns. In order to secure the proper vitrification of the clay bodies which we call bricks, it has been the custom of the majority of the brickmakers during the past to build arches formed of the unburned bricks, and so to arrange within the body of the kiln or clamp as to support the superincumbent unburned bricks arranged for convenience of setting in upper and lower benches of the kiln or clamp; and the fire, ascending upward through the space allowed in the setting, bakes the bricks more or less hard according to their position in the kiln, and according to the intensity of the heat applied. During all of these centuries untold million upon millions of dollars have been wasted in the burning of bricks in open-top kilns. This tremendous loss has resulted in part from the causes which

we have enumerated above, augmented by the waste of the heat from the top of the kiln while the bricks are waiting in the kiln chamber to become cool enough for removal. It is manifest that if this heat could be stored up and used and the heat contained in the bricks being manufactured utilized, so that when the kiln chambers are ready to be discharged, the bricks being very nearly cooled, there would inure to manufacturers a great cheapening in the cost of production over the old methods which have prevailed so generally in our trade for so many centuries.

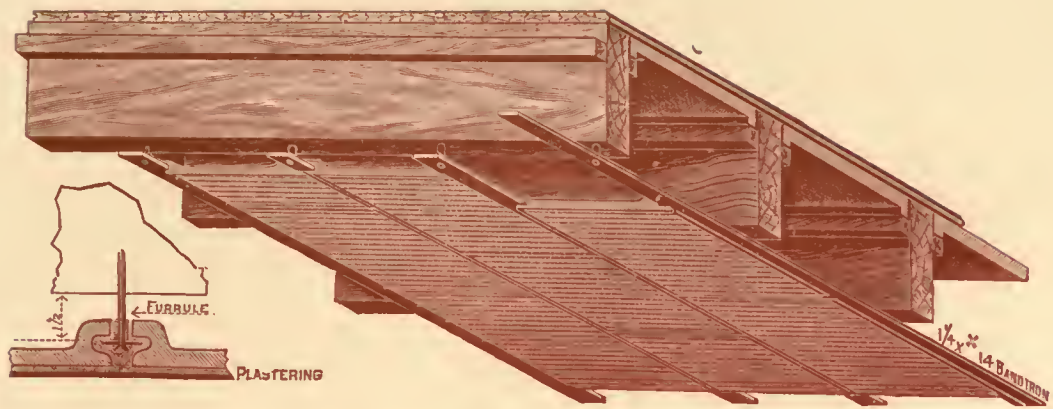
“During the past ten or fifteen years a great gain has been made in the burning of bricks by the employment of the kilns invented and built by Eudaly, Pike & Castle, Morrison and other practical brick manufacturers of to-day, whose names and achievements in this direction are so well and favorably known to the entire craft. All of the kilns invented by these men have long since passed the experimental era and are demonstrated practical successes, not only in securing uniformity in burning, but in economy of fuel and labor and in other essential points. The question that confronts us is: ‘What is to be the brickmakers’ fuel of the future?’ Owing to the losses which we have previously mentioned, and resulting from the use of coal, this fuel is destined to be superseded by some form of fuel which will avoid such losses, and which will dispense with all of the inconveniences now encountered in the handling of coal, and of the ashes resulting from combustion. Wood is rapidly becoming too scarce and high near the great centers of man’s habitation to be regarded in the present discussion. Fully two hundred million of bricks a year are being burned in the city of Chicago with crude oil fuel, obtained from the fields of Lima, Ohio, and a clamp containing one million bricks can be burned with crude oil in Chicago at a labor cost of less than \$100, and at a total cost for labor and oil of about forty cents per thousand bricks.

“Is this the coming fuel? We do not think that it is, for the reason that there are not many places in the world where bricks can be burned with oil at such a low cost as in the city of Chicago; the reason being that oil is not everywhere obtainable so cheaply as in that city, and because few clays in the world are so easily burned into bricks as are the clays of Chicago. In Milwaukee, Wis., and in other places within a distance of one hundred miles from Chicago, the time required to burn building bricks with crude oil fuel averages from sixteen to twenty-one days, whereas the time of burning the Chicago clays averages only about five days, and splendid ‘burns’ have been secured there with crude oil in three and one-half days. It is evident, therefore, that crude oil fuel for the burning of bricks, in addition to being uncertain in supply will vary in different parts of the United States too greatly to make its employment general. In order to secure the best results with any fuel it is not only necessary that a cheap fuel should be used, but that it should be always obtainable, and that all of it should be burned and turned to commercial account in the operations of brick manufacture.

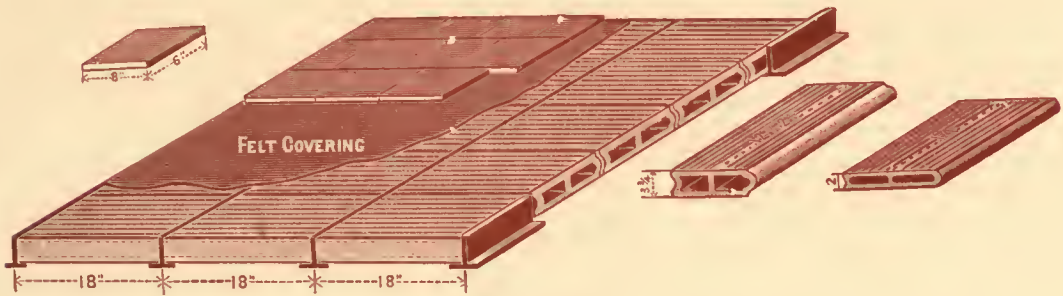
“The year 1890 witnessed a remarkable advance in the use of artificial gaseous fuel, or ‘fuel gas,’ as the article has come to be generally known in contra-distinction to natural gas. This form of fuel has for many years been employed in Europe, but it has only been

during the past year that any considerable number of brick manufacturers in the United States have discovered the economy of 'fuel gas' over other forms of fuel. The brick manufacturers in this country now using 'fuel gas' for brick-burning purposes are the Thomas Pressed Brick Company, Brussels, Ill.; the Union Mining Company, Mt. Savage, Md.; the Perth Amboy Terra Cotta Company, Perth Amboy, N. J.; the Fort Payne Fire Clay Company, Fort Payne, Ala.; Harbison & Walker, Pittsburgh, Penn., and W. J. Cooper's Fire Brick works, Irwin, Penn. The increase in the use of this form of fuel has been due to two causes, in a way independent of each other, yet which have assisted each other in bringing about the results attained. The first and perhaps more potent cause has been the fact of engineers having observed the great advantages arising from the use of fuel in the gaseous form over that in the solid, which has led to the invention of many forms of machinery for the economical production of gas from the crude forms of solid or liquid fuel. The adoption and trial of these forms of machinery gas producers, as they are generally termed, has, to an extent, greater perhaps than in any other locality, been in the city of Pittsburgh, Penn., where, from various causes, the use of natural gas in the iron mills has to some extent been discontinued. Of the various systems of manufacture of fuel gas, and their respective merits as against each other, it is not now our purpose to speak in detail. The claims made for each process and description of the apparatus employed need not be dwelt upon here. However, enough has already been done to prove beyond question that fuel gas can, in the matter of economy in use, compare most favorably with the other forms of fuel, solid, liquid or gaseous. The system of manufacture best adapted for any special class of work depends so largely upon local conditions, cost of crude material, labor, etc., that the question of what is best for any one place must be settled by itself only, and can not be answered by results attained under different first conditions. At the present time many of the largest iron, glass and brick works in the city of Pittsburgh are changing, or have already changed, to the use of fuel gas. The resumption of coal as fuel, if done at all, is looked upon generally as a makeshift, and only temporary."

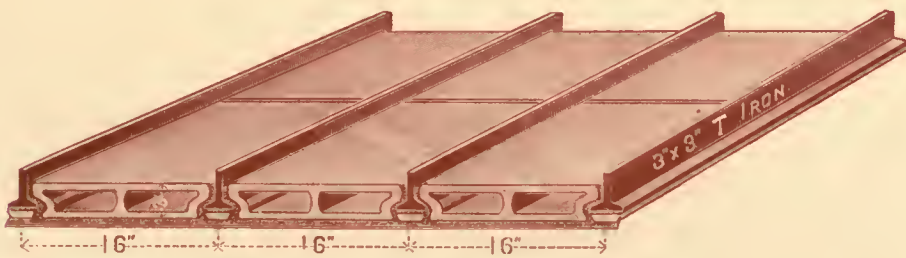
The history of brickmaking in all its departments shows that this art has been a follower and not a leader of other arts. For instance, improvements in the manufacture of common, pressed and ornamental bricks have been made during the past ten years more rapidly than in ten past centuries, because of the great advancement achieved in architecture, and the art of constructing private and public edifices. Improvements in the manufacture of street-paving bricks have been following upon the heels of improved methods of constructing roadways in cities and towns wealthy enough to have smooth, clean and noiseless pavements. Improvements in the art of fire-brick manufacture have been made only in obedience to the demand for improved qualities of iron and steel, and now that there is such a general demand for a fuel that will thoroughly vitrify all forms of brick and produce a uniform and economical burn in all localities of the country, it would seem that fuel gas is the brickmakers' art and has come to stay, and that this fuel is not only to be the brickmakers' fuel of the future, but is actually the advanced brickmakers' fuel of to-day.



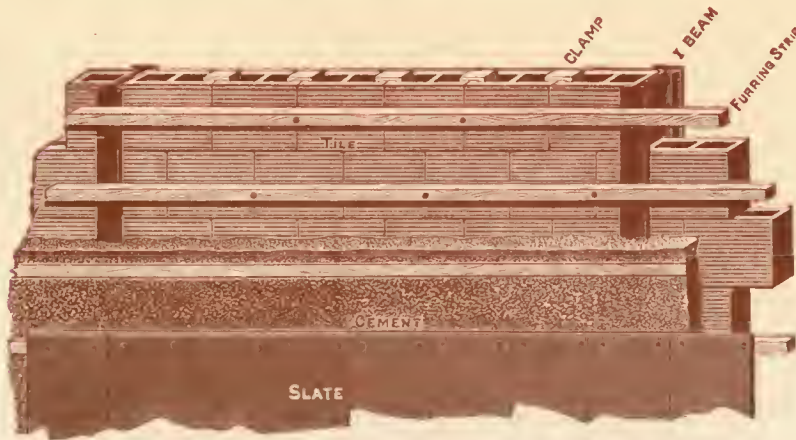
FIREPROOFING APPLIED TO WOODEN BUILDINGS.



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CONSTRUCTION OF CEILINGS.



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A paper read before the Illinois Association of Architects in December, 1885, dealt with the subject "Efflorescence on brick walls." It was a timely topic, for its discussion at that period led to such improvement in the manufacture of pressedbrick, that the efflorescence period ended shortly after its beginning. C. F. Anderson, the writer, says: "It has been the subject of numerous newspaper articles, both in this country and abroad, calling attention to the fact from time to time that such evil existed, and advancing various vague theories as to the cause. But the whole subject, until recently, has been treated in a far-off kind of way, no one seeming to care to undertake the genuine practical hard work requisite to probe the cause of the evil, and then try to devise an adequate remedy. In this city, until very recently, little notice was taken of it, because the color of our common bricks and limestones, from which the great bulk of our buildings are constructed, were like in color to these exudations, but the red pressedbrick which are now so largely used, furnish too good a chalk board for this mischievous imp who has been busy at work tracing out his old name, born on the other side of the ocean—saltpetre. The substances of this wall-coating, I find by various experiments and chemical analyses, to be essentially the sulphates of magnesia, soda and potash. I say essentially, because other salts are sometimes present as nitrates of the alkalies above named. But these do not concern us so much in this inquiry, as they are seldom met with, except in close proximity to the ocean, where the sea salt becomes a factor in their production. In this city I have never found the nitrates present, except in one or two cases in the walls of barns where a high condition of nitrification prevailed. These coatings do not come from the facingbricks, as has been generally supposed, and I desire to be distinctly understood when I say that this is not only true of any one particular kind or make of pressedbricks, but is true of several kinds of pressedbricks commonly used in this market. The case, however, is different when we come to consider the common bricks from which the rear walls are constructed; but still they are by no means the main cause, for the main cause lies in the lime of the mortar, or, more properly, the magnesia present in the lime of the mortar used in laying up both the common and pressedbricks. In order to arrive at a correct understanding of this matter, I will consider, first, the walls themselves—how they are constructed and the nature of the materials that enter into the construction; and it may be proper to state here, that although the evil is not confined, by any means, to the brick walls, it is my purpose, at present, to narrow the scope of inquiry, so as to embrace only that class of walls which most concern our city, that is, red pressedbrick walls. These walls are constructed with an outer facing course of pressedbricks, and an inner wall of a number of courses of common bricks. The materials entering into the construction of these walls are, mainly, pressedbricks, common bricks and mortar. Of what are these materials compounded, and what do they have to do with the exudations? Let us see.

"The bricks are made from common clays—nature's chips, once drifts and sediments upheaved by igneous action into mountains and again planed off, disintegrated and sent down from the mountain heights into the lowlands, by chemical and aqueous agencies. It will be necessary again to narrow the inquiry geographically to such clays as enter into the construc-

tion of our Chicago buildings. These clays are of three classes—drift clays, alluvium clays and sedimentary clays. The common bricks of the rear wall are made from the first-named class of clays, there being an abundant supply of a calcareous pebble drift underlying the city to a great depth, and, in fact the only clays cheaply accessible for this grade of bricks. About twenty per cent of the bulk of this clay deposit is represented by small stones, or pebbles, of various kinds and sizes intimately commingled with the clay. These pebbles for the most part are made up of dolomite limestone, about twelve per cent calcareo-magnesian, and seven per cent granitic and feldspathic, and about three per cent of their bulk of iron pyrites (sulphite of iron). Besides these pebble impurities, there is also a portion of finely-divided magnesia and potash present in the clay, and a quantity of coal screenings is added to the mass, all of which go to make up the completed bricks, and this mixture, after the burning process, enters into the rear walls and has an important bearing upon the subject which will be more fully explained hereafter. The facingbricks are of wider range and of quite a different character, being made from the alluvium and sedimentary clay deposits, few of which contain any of the efflorescing germs in such quantities as to be producible on the face of the bricks under the severest tests. This is especially true of the third class of clays, which are the depositions of the fresh-water sediments, and are, therefore, practically free from the alkaline earths.

“And now we come to the mortar of the walls, in which will be found the main germ or primary cause of the evil, and in this consideration, I need not enter into a discussion of any of the elements in this compound, for, practically, so far as we are concerned, there is no part of the material, except the lime itself, that contains more than a mere trace of the germ or, more particularly, that part of it which is not lime, but an impurity, magnesia. Here is an analysis of the wall coating: Insoluble matter (brick dust), 2.14 per cent; lime (CaO), 1.68 per cent; potash (K₂O), .08 per cent; magnesia (MgO), 14.57 per cent; sulphuric acid (SO₃), 32.42 per cent, and water, 49.85 per cent. It will be seen that these scrapings are nearly pure epsom salts, or sulphate of soda. I will give the analysis of epsom salts: Magnesia (MgO), 16.26 per cent; sulphur (SO₃), 32.52 per cent; water, 51.22 per cent. This sample for analysis I obtained by scraping from the walls of a prominent building in this city. It will be seen by the example, which is a fair specimen of all the others, that the sulphate of magnesia is the predominant substance. Now let us look at the composition of a number of the limes used in laying up these walls, which will appear by the following analysis: No 1—Carbonate of lime, 54.84 per cent; carbonate of magnesia, 43.94 per cent; alumina, .59 per cent; silica, .63 per cent. No. 2—Carbonate of lime, 56.00 per cent; carbonate of magnesia, 42.92 per cent; alumina, .75 per cent; silica, .33 per cent. No. 3—Oxide of lime, 59.36 per cent; oxide of magnesia, 34.87 per cent. No 4—Oxide of lime, 91.84 per cent, and oxide of magnesia, .49 per cent. The first two examples are a complete analysis of the stone; the other two are for lime and magnesia, only from samples of burned lime.

“It will be seen in allowing a full complement of sand in the mortar, that as much as twenty per cent of this germ is to be found in some of these limes, while others contain but

a trace of magnesia. This answers the question which has repeatedly been asked—Why is it that two buildings built side by side, of the same bricks (as it often happens), that one of them will show the exudations badly, while the other will be quite free from the exudations? Such differences can not come from the front bricks, for it is a well-known fact that whatever of the alkalies exist in one part of a clay bed permeates the same strata in about the same proportions all the way through, and as I have before stated in substance but few of the surface alluviums, even at great distances apart, vary much in this regard. We have seen by the analysis of the wall coatings that the substance was mainly sulphate of magnesia, but that other sulphates were present, as of soda and potash; and, in the lime analysis, we have traced the alkaline oxide of magnesia, and in the common bricks the potash and soda which are also in the alkaline state so far as it would appear. But how does it happen that these substances actually appear as sulphates? I have already, in the discussion of common brick clays, described the presence of sulphite of iron and coal screenings. In the kiln firing, the sulphur is eliminated from the iron sulphite and converted into sulphuric acid, and is absorbed by the bricks; and a like conversion takes place with the sulphur contained in the coal screenings. Analysis of the common bricks shows sulphuric acid, as well as the soda and potash before referred to, as belonging to the clay impurities.

“But as this is an important point in consideration of the subject, I will explain more in detail what actually takes place in producing these changes. The sulphur is eliminated from the iron sulphite and coal screenings, at a red heat in the kiln firing, in the form of sulphuric acid and sulphurous vapor. The sulphuric acid combines with the bricks, and a part of the sulphurous acid, if left free, would ascend to the atmosphere above; but being confined within the bricks, unites with such bodies found there as have the greatest affinity for the acid. These are the bodies present having the highest alkaline properties, being the potash of the coal screenings, residuum and calcio-magnesian pebbles present in the bricks, potash, lime and magnesia, each taking up its equivalent of the acids in its order and converting it to a salt. Now I will proceed to describe how these salts find their way to the face of the front walls of a building. In laying up the walls, the common bricks are first saturated well with water, to prevent the too rapid absorption of the water from the mortar, thus causing it to set too quickly, and as the most of these alkalies are insoluble in their first condition, all of them as sulphates (except the lime) are highly soluble in water which takes them up in solution, and, in the process of the drying out of the walls, are carried through the facing bricks to the point of natural evaporation, which is the face side of the wall where it comes into contact with the drying, water-absorbing influence of the atmosphere, and as water goes off distilled by nature's laboratory, the residuum salts, which were in solution with it up to this point of evaporation, are left in crystal form upon the surface where they remain until the walls are thoroughly dried, or until the walls are wet by a rain storm, or a change of weather brings a greater degree of moisture in contact with the surface of the walls than the bricks contain, when the crystal dissolves, and the solution will be absorbed back into the bricks to appear again in dry weather. But I have traced to the surface only the germs of the common bricks, and this, as I have before stated, is but a small part of the evil.

“I will now consider what action takes place with the mortar impurity. The magnesia of this compound is but sparingly soluble in the form of the oxide, but, being in excess, and entering into the construction of the rear walls so abundantly with a lavish use of the mortar, even if no free acid is present, much of it is absorbed into the facingbricks. If the two walls of facing and common bricks are built up in close capillary contact with each other, it finds its way to the surface to receive its dose of acid, which it obtains, in the process of time, by the absorption of sulphur fumes, the gaseous product of combustion from the general atmosphere of the city, and sulphuric acid in the rain water absorbed, and in a large way by a practice which I will presently explain. A different color of mortar is commonly used in laying the pressedbricks, but the same lime is usually employed, and the mortar of the common brick is grouted into the joints of the contiguous courses of the two kinds of bricks, so that the mortar of both walls, as well as the bricks themselves, are in conjunction with each other, and the osmotic action described as taking place between the bricks, also takes place between the mortars.

“In laying up the walls, more or less of the mortar adheres to and hardens on the face of the pressedbrick, which is necessary to be cleaned off, and, in doing this, a highly objectionable method is universally employed, that is, washing the surface of the walls with a solution of common hydrochloric acid. Now what comes of this practice? What does this material contain? In addition to the other objectionable qualities, by chemical analysis, it will be seen that the common hydrochloric acid, which is the kind used for this purpose, contains a large proportion of sulphuric acid. The action of the hydrochloric acid, is to decompose the mortar on the surface of the bricks, and it permeates as well the mortar joints of the pressedbricks, rendering the lime of the mortar which was before but a little soluble, highly soluble under its influence and the sulphuric acid, the very thing needed to convert the oxide of magnesia, which I have already shown to be present at the surface of the bricks and within the mortar joints, into the sulphate of magnesia, and thus complete the work of blearing and blotching the walls.

“Now gentlemen, I will offer some suggestions for your consideration, which I deem important in the way of remedying the evil. The first matter naturally suggested is to use pure lime only in the entire construction of the walls; but this is hardly practicable, for the same geological strata of dolomite limestone extends over a wide area, and it would entail considerable additional expense to go beyond these limits; and the same objection is met with in the clays of the common brick, and inasmuch as the main bulk of the mortar in the structure goes to make up the common brick wall, the best method which I am able to suggest is to provide a pure mortar for laying up the facingbrick, and then isolate this part of the wall in the construction from the rear wall with a suitable impervious material, and thus cut off the osmotic action between the two walls. It is also suggested that, as water saturation is one of the elements of crystalization, and, in fact, the vehicle that penetrates the walls, gathers up and conveys the poisons to the surface, as little of it should be used as possible in the construction, and that every means should be provided to prevent the saturation of the

walls by rain storms during the process of erection; and all safeguards provided in the construction of the buildings themselves, to prevent undue saturation.

“It will be noticed that wherever the walls are most exposed to the direct wash of the rains, as about leaky spouts, etc., there is a plentiful supply of the exudations. This is particularly noticeable about the top walls and chimney tops. Suitable, impervious wall-cappings, with projecting drips, should be provided for the chimney-tops, wall-tops and copings. Another kind of coating should have a place here, noticeable upon some of the brick walls, which has been the cause of no little complaint and annoyance—the discoloring stains of the stone courses, which appear on the surface of the brick wall, below the stone. These stains are traceable to the disintegrated particles of the stone, which wash down over the face of the stone and are absorbed into the pores of the same, and do not belong to the agencies of the alkalies and acids under discussion, except in their primitive handiwork provided by nature, in the disintegration of the rocks to earths and clays; for, be it remembered, they are nature’s reagents to perform a large part of this work, and are the tools of the chemist, with which to dissolve the stones, and extract therefrom the hidden metal treasures within. Even the best granite is subjected to rapid disintegration in this climate; and wherever stone facings are combined with red brick facings, unless good roof projections and copings are used, and the stones themselves made to project well over the face of the bricks with grooved drips, a space for a considerable distance below the stone will be stained with the products of the disintegration, and it will become so thoroughly fixed within the pores as to resist every known method of cleaning. One other point I desire to refer to, that needs attention, is the proper housing of the pressedbrick. While I have been unable to find the nitrates or other salts than magnesia salts present in any appreciable quantity, it does happen that bricks, when unloaded in the streets, absorb the salt-producing animal matters of the roadway, and other objectionable matters, such as ashes, etc., with which they may come in contact.

“I am unable now to demonstrate more fully some of the important points under discussion, such as converting all the alkalies shown to be present in the walls by an analysis into their respective salts, and of tracing these salts from the common bricks and mortar, through the facingbricks, giving you an ocular demonstration of their appearance through the mortar joints appearing on the face of the bricks; also to demonstrate the identity of the respective crystals, with the wall-scrapings under microscopic polarized light. I will state in this connection, in the way of proofs, that the analysis which I have presented and referred to, of the wall-coating limes and bricks, are confirmed by one of the best chemists in the city (Mr. Jackson). I wish to emphasize what I have here said, and what I have repeatedly said to some of you, and which is also embodied in a paper of public record of four years ago, which I have demonstrated over and over again, that these exudations do not come from the pressed facingbrick, as has been erroneously supposed, and commonly alleged, but that they do come from the magnesia of the mortar and pebble impurities of the common brick; the evil being highly promoted by the customary practice of washing the walls with hydrochloric and sulphuric acid compounds used in cleaning walls.”

Terra cotta is a title applicable to baked clay in every form, but custom reserves the name for the finer work in clay used in architecture. In ancient times it was employed for building and decorative purposes; the color of burnt clay, being at once natural and warm, recommended it.

Among the Etruscans, the use of clay for important sculpture was very frequent, painted terra cotta or bronze almost excluding marble and stone. An important example was the clay quadriga on the pediment of the temple of Capitoline Jupiter, which, according to one legend, was brought from Veii by Tarquinius Superbus. This existed till the destruction of the temple by fire, in 83 B. C., and was considered one of the seven precious relics on which the safety of the Roman state depended. The great statue of Jupiter, in the central cella of this triple temple, was also of terra cotta, and was said to be the work of an Etruscan sculptor from Fregeneæ. Vitruvius mentions "signa fictilia" as being specially Etruscan. Many other statues in the early temples of Rome were made of the same material. Among the existing specimens of Etruscan terra cotta, the chief are large sarcophagi, with recumbent portrait effigies of the deceased on top, the whole being of clay, decorated with painting. Fine examples exist in the Louvre and the British museum. The Museo Gregoriano in the Vatican possesses some very beautiful friezes of a later date—about the fourth century B. C.—when native Etruscan art had been replaced by that of Greece. These friezes are very rich and elaborate, with head and scroll foliage in very salient relief. Some of them have at intervals cleverly molded heads of satyrs, painted a brilliant crimson.

The introduction of terra cotta in the United States was slow. The plans for the pension office at Washington, D. C., called for a great ornamental terra cotta frieze, twelve hundred feet in length, and this remarkable work, once accomplished, led to a very general acceptance of it as an ornamental exterior material. Ornamental pressedbrick is classed with terra cotta, and take an important place in modern structures.

The Chicago Terra Cotta Company was organized in 1866, with S. E. Loring president and James Taylor secretary, and the same year works were established on the corner of Catherine street. Up to 1873 this was the only terra cotta factory in the city, although three other firms were engaged in plaster works. John Brunkhorst, of the Northwestern Terra Cotta works, died in October, 1886. In 1874 he came hither from Holstein, Germany, and obtained employment in the old Chicago Terra Cotta works as a laborer. When that concern collapsed Brunkhorst and his fellow-workmen, J. R. True, G. Hottinger and Henry Rohkam established clay works in an old building then standing at the corner of Lincoln avenue and Wells street. Their own labor was only known until the shades of depression and panic were scattered, when they leased yards at the corner of Fifteenth and Laflin streets, and employed extra help. Later they erected the large works at the corner of Clybourn and Wrightwood avenues, and to those Germans the early success attending terra cotta works in the city must be credited. Privations and disappointments waited on their beginnings, but with that humility and economy characteristic of their race they labored on and won.

American clays have to be subjected to a clarifying process before they can be used with good results in terra cotta work. The clay washing, as carried on near South Amboy, N. J., came into general notice in 1889. The clay, being placed in a water reservoir, is subjected to a thorough disturbance, until the coarser particles and mineral substances are separated from the fine clay. The heavy particles in settling form the lower strata, leaving the fine clay above for removal to the mixers. The arrangement of vats and machinery is simple and the product clean and uniform in color. This system of washing renders clay, otherwise unfit for use, excellent in every particular. The manufacture of ornamental tile is very forward in style and finish, but is confined to a few centers in the United States. The manufacture of common tile and fireproof material shows wonderful progress in all sections of the country.

Only in comparatively recent years have the dangers of stone walls and wooden partitions or unprotected iron columns been realized by builders. The conflagrations of October 7 and 8, 1871, did not teach the required lesson, for among the beautiful buildings erected in 1872-4, several fell in the second great fire of July 14, 1874, and six hundred less conspicuous houses were burned. Five years after, fireproof material was brought to the notice of builders, but not until recent years did the system come into practical use. Architects and builders realized that clay once passed through the kiln was fireproof, but to bring this realization into practice was a difficult matter. During the last few years great buildings have been erected at short notice, the iron columns, beams, girders and joists, the door and window frames all leave the foundry ready to be placed together and reared up toward the sky; but safety requires that each principal column be sheathed with bricks or tiles and that the fireproof system of ceiling extend from joist to joist. This is the plan on which the Auditorium was constructed, and which obtains in the Leiter building on Van Buren and State streets and in the great houses erected in 1890-91. Its application to all the large buildings of the future should be a municipal requirement, and its extension to even small commercial houses and to dwellings would be a blessing. Brick and terra cotta and tile will stand where granite and iron will crumble or melt in the presence of fire.

While the presence of structural steel afforded to builders a rapid method of construction, which enabled them to build high and light, it was wanting in principles of safety until the hollow tile came to its relief. Porous bricks are now used for backing up faces. These are made by mixing the clay with a certain amount of sawdust, which is afterward burned out of the brick, reducing the weight from forty to fifty per cent. Partitions have been made lighter by the use of macolite, a material made of plaster and ground cork, which is manufactured and shipped in slabs. This material is one-third lighter than the ordinary tile partition. The partitions in the Rookery weigh about seventeen pounds per square foot, but the use of macolite would have reduced this weight to about ten pounds. A hollow tile for floors between steel beams has also been perfected. Heretofore, the tiles forming the arches from the ceilings were not quite deep enough, and the remaining space had to be filled in with a layer of mortar, causing an additional weight. The new tile will both form the arch and fill

up the floor level, thus dispensing with flat tiles entirely. Progress has also been made in the manufacture of terra cotta in different colors, gray, brown, red and other tints. It will be seen that while great progress has been made in the construction of business blocks during the last few years, the ingenuity of inventors is still busy. Every large new building represents some new idea in the line of architectural construction.

The use of special fireproofing in the construction of buildings has grown to its present vast importance almost within the last two decades. What may be termed the rudimentary development of fireproofing had been commenced as early as 1871 by Mr. G. H. Johnson. The great fire had reduced the best and most substantial buildings of the city to ashes, and there at once arose in the minds of architects, builders and owners of buildings the question, What materials and how made will serve to prevent a recurrence of the awful calamity? If the solution of that question were practicable, the possibilities of urban development would know no limit either in extent or value. Not only that, but both fame and fortune would crown the individual furnishing the best solution with imperishable renown. Many experienced minds were bent upon the subject, and from this condition of things the Pioneer Fireproof Construction Company had its origin and subsequent large development. To this well-known company must be accorded the credit of having devised the best fireproofing methods and materials. There is no longer any doubt that buildings of the largest size may be constructed absolutely fireproof. Notwithstanding that many builders are slow to make innovations on old methods and materials, the constant use of large quantities of the product of the Pioneer company at the present time and their rapidly increasing trade are satisfactory evidences of the great value of their discoveries and inventions. An absolutely fireproof building is one whose structural parts are composed of non-combustible materials, or of materials which will resist the action of intense heat. But of fireproofing, experience has taught that some materials are better than others. The great fire of 1871 proved that neither stone nor iron is the best fireproof material. It was found in all cases that brick, properly made, sustained far less damage than either of those materials. This was the cue to the discoveries that have since been made by this company. But it was soon discovered that while ordinary or pressedbrick possessed great value, a much greater general excellence could be secured by the use of hollow brick or tile. In fact it was found that this device permitted an almost endless variety of valuable uses. In order to more fully develop fireproof devices and to manufacture the resultant product, the above company was organized in 1880 with the following officers: George M. Moulton, president; A. T. Griffin, vice president; E. V. Johnson, treasurer and general manager; Charles F. Eiker, secretary. The new company began with redoubled vigor its manufactures, discoveries and inventions, and soon the demand for their product surpassed their most sanguine expectations. Without question, their hollow tile, in all its variety of shapes and sizes, is the most important or valuable device or invention of this great epoch of building development. It is surprising that hollow tile was comparatively unknown ten years ago. It was first invented by George H. Johnson soon after 1871, and first used in the building on the southwest corner of



Portrait of E. J. Whisman

E. J. Whisman

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Dearborn and Washington streets. So important was this occasion considered that the laying of the arches was witnessed by a party of gentlemen prominent in city affairs and local history. The architectural and building professions became greatly interested in the invention. Since that day, the large and steadily increasing demand for this tile has alone proved its great value. Hollow tile made of fire-clay is as durable as terra cotta, and the latter has been found in ancient Egyptian structures as free from injury as when first made by the command of the Pharaohs. The uses of hollow tile are innumerable. Its use in partitions, floors and ceilings absolutely prevents the spread of fire; rats and vermin are perpetually banished; architectural arches and angles are accommodated; even roofs are rendered both fireproof and water proof; the connected vertical hollows of the tile are used for the passage of gas, water and heating pipes and telegraph, telephone and electrical wires; of this tile chimneys are both lined and wholly built; iron beams, girders, braces and columns, otherwise easily warped and bent by intense heat, are rendered absolutely fireproof by coverings or casings of hollow tile; but perhaps the most remarkable result accomplished by the Pioneer Company is the rendition of wooden buildings fireproof by the use of casings of hollow tile and terra cotta. Even the stone of window sills is being supplanted by hollow tile, and streets are provided by it with an excellent paving material. Mortar, cement, concrete, cinders and corrugated iron lend finish and beauty to the permanency and indestructibility of hollow tile.

The office building of the company at Clark and Sixteenth streets is built entirely of their fireproof materials. The following buildings were wholly or partially fireproofed by this company: Rookery, Rand-McNally building, Pullman building, Chicago Opera house, Board of Trade, Rialto, Royal Insurance, Tacoma, Leiter building, Northern hotel, Palmer house, Montauk, Marshall Field's, Traders Loan & Trust Company, Chamber of Commerce and scores of others. It is interesting to know more of the men who, in so short a time, have made such wonderful improvements in fireproofing. George M. Moulton, of the firm of J. T. Moulton & Son, is a general contractor, doing a large business in the construction of grain elevators. Among many others, he built the Armour and the New York Central elevators. He is about forty years of age, is a native of Vermont, is prominent in the Masonic order, and is president of the River Bank Coal Company, of Streator, Ill. A. T. Griffin, a resident of Utica, Ill., born in Maine about 1840, is engaged in the manufacture of fire-brick and sewer-pipe at Utica, and is a prominent man in public affairs in La Salle county. E. V. Johnson, a native of New York City, is a son of George H. Johnson, the inventor of hollow tile for fireproofing. He is yet young, a little beyond thirty years, is a member of the Union League club, president of the Peerless Brick Company, and treasurer of the Northern Hotel Company. Charles F. Eiker was born in 1860, at Knoxville, Ill. He first began business in 1882, with his present company, as book-keeper, but is now secretary.

A paper written by P. B. Wight, early in 1885, entitled, "Recent fireproof building in Chicago," is most valuable for the ideas expressed and the facts given, and is, by all odds, the best treatise on the subject given to the public up to 1885. He states: "Before the great fire

of Chicago as many as a dozen incombustible buildings had been erected. They were all within the burned district, and all but one were more or less destroyed. The exceptional one was not completed and not dangerously exposed. The year after the great fire one incombustible building was entirely rebuilt on the old plan mainly, two were about half rebuilt on the old plan, and two new ones were erected. Five years later the incombustible jail and new courthouse were built. Nothing further of the kind was done until the improved methods of fireproofing were introduced in 1880-81, from which time up to January, 1885, there were commenced, completed or in process of construction, eighteen fireproof buildings, costing from \$100,000 to \$1,700,000 each. Nine of these are to be completed simultaneously, May 1, 1885, all of which goes to show that Chicago capitalists saw the faults of old methods, and waited until they could see their way clear to erect really fireproof buildings. As has been said, there are nine fireproof buildings now in course of completion, and all to be finished by the first of May. All will be finished except one, and that will be occupied on the first four floors even if not completed above. They are the new Board of Trade, the Home Insurance building, the Royal Insurance building, the Opera house block, the Gaff building, the Mallers building, the Insurance exchange, the Traders' building and the Parker building. In all but three pressedbrick is used for all the exterior walls; in one, the Royal Insurance, which fronts on two adjacent streets, one front is pressedbrick and the other is red granite. One, the Parker block, has a sandstone front, while one, the Board of Trade, is faced with granite on three fronts, the rear wall being faced with enameled bricks. So it will be seen that brick and terra cotta have been mainly used for the exteriors of these buildings, and the risk of damage by fire from without has been reduced to the minimum. But it is in the interior construction that the most important features appear. All are built without brick partition walls, except such as are absolutely necessary for their construction. All have their floors supported on plain constructive iron columns, without ornament and of sufficient size to carry their respective loads. All have wrought-iron girders, and all except one are at least nine stories high. The first six have rolled-iron floor and roof joists, and the last three have wooden floor and roof joists. This is the main point of departure, and divides them into two classes. But in one other respect they are similar in that all partitions are of hollow tiles, ranging from three and a half to six inches in thickness. This is to avoid weight on foundations and to economize the ground room. In one, the Home Insurance, the iron construction of the interior is carried out to the exterior walls, and every pier contains an iron post, which is secured on each story to the whole system of girder construction, and it thereby becomes an iron structure complete in itself, masked by an exterior brick wall. In every one of these buildings each iron column and girder is encased in some kind of terra cotta or fire-clay material for its protection against fire. All the columns are artistically finished in plaster, Keene's cement, or polished scagliola, and all the girders are finished in plaster on the fireproofing material. All the buildings having I-beam floors are constructed with flat, hollow tile arches, so laid as to make continuous tile ceilings below the bottoms of the beams, no beams showing where the centering is removed. All those having wooden floor joists have



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suspended flat, hollow tile, continuous ceilings attached to the bottoms of the floor joists and extending the brick walls all around. These ceilings are plastered before the partitions are set, and have double floors above with one and a quarter inches of deafening between. The nine buildings are the work of seven architects, or firms of architects, all residing in Chicago. They are all built in acknowledgment of the fact that cast and wrought-iron, which receive the condemnation of so many thoughtless critics for want of knowing how to use them to best advantage, are still the most valuable of all constructive materials for interiors; that all constructive iron work in a building, howsoever or wheresoever used, must be protected thoroughly and unmistakably from the action of fire; that all partitions and subdivisions must be as thin and light as possible, and that the only material to be used for this purpose is the product of clay, either in the form of hollow, well-burned fire-clay, or its superior, for all purposes of covering columns, girders, rooftrusses and isolated constructions, porous terra cotta. No blocks or materials containing plaster have been used in these buildings. Plastering used in its legitimate place for the coating and finishing of the interiors and applied to the fireproof protecting material, becomes a valuable assistant in resisting the first attack of fire, and in such use only. It is better in such cases that no plaster of Paris should be used, as lime and sand are better resisters of fire and water than any other plastic material.

“The main divergence in the systems of fireproofing is between the buildings having iron beams and those having wooden joists. It will be seen that the latter use wood only for one purpose, to resist the transverse strain of the floors between the main supports, for all girders are of iron. The principle on which the tile ceilings are laid is that they must be continuous from wall to wall, and all pipes or openings through floors must be cased around with the same fireproof material. The floor joists are all treated as one, and the ceilings are continuous sheets of fireproofing, which must not be broken, or the whole integrity of a floor might be in danger. As long as this is preserved such a building will resist fire as severe and as long as one in which the I-beam and tile arch are used, and there is no reason why it should not be called a fireproof building. It is far safer than one in which the iron is exposed, though built throughout of incombustible materials. Ceilings under wooden joists made of plates of porous terra cotta, secured by screws and plates to the joists, as used in the store of Martin Ryerson, Chicago, and the American Bank Note Company, N. Y., are better non-conductors than solid tile, and will resist heat better than any other construction that has ever been employed.

“About thirty years ago, when timber had commenced to be dear, and the wrought iron I-beam was invented simultaneously in France and England, America rapidly commenced to appropriate it to its own use. The valuable properties of cast-iron as a constructive material for the manufacture of posts, columns and short lintels, no less than the building of entire exteriors had just been discovered. As iron would not burn like wood, no one stopped to inquire further about it; but the whole world proclaimed it to be the fireproof building material of the future, which would enable us to erect fireproof buildings without wasting land, and with great economy of space in every direction. Moreover it was not too expensive

considering the results supposed to be obtained. Cast-iron fronts were merely substitutes for brick and stone and had to compete against them in the market. But the popular opinion was that they could not burn, and that to such an extent the buildings on which they were used were fireproof. Hence, when several such buildings in New York were burned, and the fronts fell down flat on their faces in the street, the average newspaper reporter was greatly nonplussed and befogged in his graphic descriptions, and wondered how iron buildings could be burned; but to the credit of the architectural profession it may be said that the architects did not consider cast-iron fronts to be essential to the construction of fireproof buildings. Their exteriors were made much the same as before, brick being preferable to stone for outer walls, except in public buildings where stone or marble was considered essential to their monumental character. But the interiors were filled with iron columns, iron girders, and floors of I-beams carrying brick arches between them, the lower flanges, most liable to expansion in case of a fire, being entirely exposed while roofs were of lighter constructions, covered with corrugated sheet-iron, and there are many who consider these to be all that is essential in a fireproof building at the present day. They have been practically demonstrated by numerous instances of costly experience to their owners to be not fireproof buildings at all. They are simply incombustible buildings so far as iron and bricks are used in them. They are combustible just so far as wood is used in them. When the wood is in sufficient quantities to soften and melt the iron, they are destructible buildings, and of the worst kind. When they burn, the destruction is almost absolute. One of the most costly features in this thoughtless system of construction is the great expense of removing the ruins, which consist of a tangled mass of bent, twisted and broken iron, mixed with bricks and other debris. The expansion of the iron generally destroys the brickwork, which would not be the case with ordinarily good walls, were timber used instead of iron."

The knowledge of how mineral wool is made is probably known to very few. It makes an interesting study and its history by H. A. Higgins can not fail to be instructive. "Mineral wool is produced from the slag coming from blast furnaces while in a molten state at about three thousand degrees Fahrenheit, and converted into a fibrous mass closely resembling sheep's wool or cotton. Made by the new process, it is wonderfully improved, being light, soft and the fibres very tough. The Chicago Fire Proof Covering Company are extensive manufacturers of this product, and also of covering made from this material, which is undoubtedly the best and most satisfactory non-conductor of heat now on the market. From recent tests made by a large concern in this city it was found that mineral wool covering made by this company was by far the best non-conductor of heat and the best covering for general use over all the other coverings that were represented, and about all the coverings that are on this market were included. A covering for large surfaces such as boilers, domes, heaters, tanks, breeching, etc., has been wanted for some time in block form that was absolutely fireproof. The old way of covering these kinds of surfaces has been found very difficult to apply and very unsatisfactory as to the results. This company is making a covering in block form of mineral wool, packed in an envelope made of heavy fireproof asbestos sheathing containing one

square foot each by one and three-fourths thick. The insulating qualities of this covering are so great, that after it has been applied to a heated surface the outside of it is so cool that by feeling of the outside one would scarcely know that there was any heat in it at all. The question of economy is a very important factor in any establishment. Experience proves that by the use of mineral wool covering a saving of fifteen to twenty-five per cent has been made in fuel. The cost of covering is very small when compared with the cost of the extra amount of fuel required to keep up a good supply of steam. Of course the condensation varies according to the location of the pipes and the atmospheric conditions. It is interesting to know just what is gained by the use of mineral wool covering. Practical experiments have given the results in dollars and cents. For example, taking fuel at a price of \$4 per ton, and every square foot of steampipe uncovered radiated on an average of sixty-eight cents worth of fuel to every three hundred working days; the cost of covering, itself, applied on the pipes would be about twenty-five cents per square foot. Thus it can be seen that the covering would pay for itself in a few months. It is not a question of economy alone, to a large establishment, to cover its pipes, but a great assistance in running its plant; where condensation is prevented, hot and dry steam with its full power is to be had. Mineral wool contains from eighty-eight to ninety-two per cent of its volume of air in confinement. It therefore has the essential requisite of a good non-conductor or insulator of heat, cold and sound, viz., Air confined in a finely subdivided state. Mineral wool is also used to prevent the freezing of water or gas pipes, and also comes largely in use for building purposes, such as residences, cold storage and refrigerators, brewery vaults and ear-linings. As a deadener of sound it has no equal, and for use as an insulator of cold it is meritorious.

“Among the valuable improvements made in economical appliances during the past few years in connection with the use of steam and power, a covering for protecting all heated surfaces is noteworthy. It is a fact well known to steam users, that there is a great loss of fuel caused by the condensation of steam in transit from the boilers to the point where it is used, whether as power in an engine or for other purposes. Years ago when fuel was less expensive, and competition in trade not so sharp as it is to-day, this loss or waste was not noted. Formerly steam plants were comparatively small and the lines of pipe short, and the necessity of covering them was not given much thought; but in late years steam power has come into such general use, that it has been found advantageous to have lines of pipes, for conveying steam long distances, well protected with some kind of insulation, and the question has been, what method could be devised to accomplish the desired result, that is, to keep the steam hot and dry, thus retaining its full force and elasticity. The desire to secure an article to perform the work, a good non-conductor of heat, has puzzled the brains of skilled mechanics, and for many years a variety of coverings have been tried with more or less success. Among the first to be used were ropes of straw wrapped around the pipes over which was plastered common clay mixed up like mortar. This was improved upon by the use of hair felt, being made of common cattle hair woven into a thick cloth, but in each case it was found that both of these coverings were combustible and became worthless and positively danger-

ous. In addition to these, there have been a great many different styles of covering made, but none were considered fireproof, until asbestos, a species of hornblende, was discovered, which was mixed up with a sticky substance into a cement, and applied with a trowel; this was used for some time, but owing to the density and lack of porosity, it was not a good non-conductor of heat, though for some purposes it is still in use.

“Other so-called fireproof coverings have been made, but have never proved successful. Even to-day there are coverings made in molded forms from different materials called magnesia, asbestos and other titles which have the same objection; while they are fireproof, they are very poor non-conductors of heat. The growing demand for a good non-conducting sectional covering set inventive minds at work experimenting with different materials, hoping to find something that would combine the chief features necessary to make a perfect covering for all kinds of heated surfaces that was absolutely fireproof. The idea of making it into sectional form was to make it easy to apply, and which could be removed by unskilled hands. The result of one of these experiments brought out the material known as mineral wool, which combined the fireproof and non-conducting qualities, though for the lack of proper facilities for producing the material, it was not made to any large extent until within the last few years, when it remained for a Chicago firm (after repeated tests) to produce mineral wool in such a fibrous state as to make it an acme of non-conducting and fireproof steam-pipe covering.”

Having given a brief sketch of the specialties manufactured by the Chicago Fire Proof Covering Company, it is proper to say something regarding the rapid advancement and progress which this company has made. The officers are Harvey A. Higgins, president and treasurer; Henry C. Todd, vice-president and secretary. Their office and factory are located at 37 and 39 Michigan street. They are young, active business men, with large experience and ability. They have left no stone unturned in the way of improving the manufacture of their products, and the success and popularity they have achieved is due entirely to their own efforts. Their business extends to every state in the union. They have been awarded the largest and most important contracts ever let in their line. We give the names of a few which stand among the highest concerns in this country: The Fair (new building to be sixteen stories, largest in the world of the kind), Chicago; The new Wisconsin Central passenger station, Chicago; the Chicago Edison Company's building, Chicago; the Brewer & Hoffman Brewing Company's building, Chicago; James S. Kirk & Company's building, Chicago; Carson, Pirie, Scott & Company, new wholesale house, Chicago; Western Bank Note & Engineering Company's building, Chicago; Crane Company's building, Chicago; West Chicago Railway cable station, Chicago; Theological seminary, Chicago; St. Luke's hospital, Chicago; National Electric Construction Company, Chicago; Chicago Packing & Provision Company's building, Chicago; Chicago Hydraulic Pressed Brick Company's building, Porter, Ind.; Purlington Paving Brick Company's building, Galesburg, Ill.; Illinois Northern hospital for the insane, Elgin, Ill.; Lumbermen's Exchange building, Minneapolis Minn.; DeBardelaben Coal & Iron Company's building, Bessemer, Ala.; Tacoma Light & Power Company's building,

Tacoma, Wash.; Rockford Standard Furniture Company's building, Rockford, Ill.; Oxnard Beet Sugar works, Grand Island, Neb.; Norfolk Beet Sugar works, Norfolk, Neb.; Iowa Institution for Feeble Minded Children, Glenwood, Iowa; Isabella Furnace Company's building, Etna, Penn.; People's Railway & Electric Light & Power Company (power station), St. Joseph, Mo.; Tennessee Manufacturing Company's building, Nashville, Tenn., and hundreds of others. The motto of this company is "The affairs of trade hinge on confidence." They are prepared to take contracts for furnishing and applying their fireproof covering for pipes, boilers, etc., in any city in the United States, having their own experienced men who thoroughly understand their work. The same is true for supplying and filling mineral wool in floors as a deadener of sound and an insulator of heat or cold. They guarantee satisfaction in every instance, and offer their assurance that any contract made by them will be carried out fully as agreed.

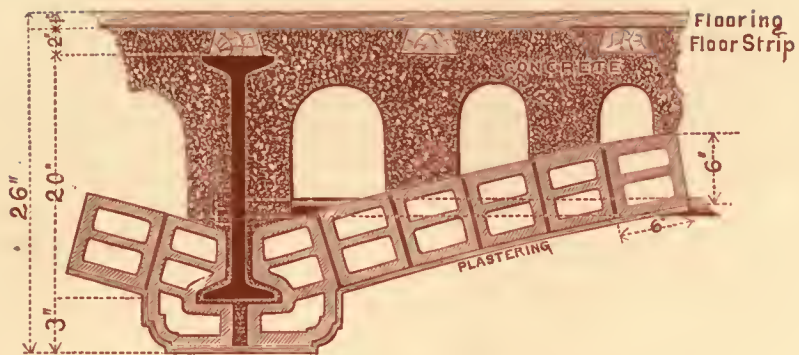
A description of the method of manufacture of fireproof hollow tiles can not fail to be instructive. It is based in general on the manufacturer's description: The fire-clay is delivered at the works by tram-cars, and dumped automatically into the clay cellars, which have a capacity of about one thousand tons, whence it is carried to huge crushers. The crushed clay finds an outlet in the side of the pan, where it is caught up by ordinary elevator buckets and carried to the top of a tower seventy feet high; thence it is forced through a screen, and, passing through a chute, is reconveyed to the ground floor, where it is tempered in similar machines to the crushers. There are two sets of crushers and three tempering machines, and their capacity is about one hundred and fifty tons per day. The tempered clay is again elevated, and distributed to several steam-presses, which produce the tiles. The press consists of a steam cylinder thirty-six inches in diameter, placed in a perpendicular position, acting directly by means of a plunger head on the eighteen-inch diameter clay cylinder below, thus forcing the clay through the dies. On the floor below, the tiles are cut to the required length, and wheeled away to the dryrooms. Each inch of clay is subjected during its manufacture to a pressure of two hundred and forty pounds, while in a damp or moist state, thus forcing the particles compactly together and accounting for the great strength of the tiles when made. This can be understood when it is explained that ordinary common bricks are made without pressure. The dryrooms are arranged in two three-story buildings, all built of three-and-one-half-inch hollow tiles. In fact, hollow tiles are used wherever it is possible, in walls, chimney stacks, etc., as they have proved to be the best material to withstand heat, the surface of a kiln chimney being comparatively cool with a coal fire of 1,800 degrees Fahrenheit on the inner side. The buildings are arranged with three open slat floors, with half-story communications made by easy inclines, so that material can be readily transferred from floor to floor. They cover one hundred and twenty thousand feet of space and are almost entirely covered with the different descriptions of hollow tiles, which are constantly turned or handled on the floor till dry enough to burn. The tiles are also moved from floor to floor by belt elevators fitted with shelves. The dryrooms are supplied with some twenty thousand feet of steam pipes to assist in drying. Perhaps the most important feature of the

plant is the burning kilns. These, fifteen in number, are arranged in two tiers, and are all of the latest pattern. About fifteen kilns a week are burned, the action of the heat upon the clay being exceptionally perfect, few cracks being observable in the finished tiles. The motor power of these works consists of a twenty-five-inch Victor turbine wheel under a twenty-eight-foot head, equal to one hundred and twenty-five horse-power. A battery of four boilers is used for heating and supplying steam for the steam presses, and an engine of eighty horse-power is held in reserve for emergencies, for as these works run night and day the possibility of a stoppage from any cause must be provided for. The entire works and grounds of the company are lighted with the incandescent electric light.

In fact, the works are perfect in every detail and are considered the most complete fireproofing manufactory in the West. An important point in the successful working of a factory of this kind is the quality of clay used; this question was carefully considered, and a tract of land near their works was purchased, assuring an abundant supply of clay. The first stratum is loam, the second shale, the third about two feet of a good quality of coal, and at last a twelve-foot vein of the best quality of fire-clay, with outcroppings of a fine, white and plastic potter's clay.

Arches for floors form by far the most important relation to the fireproof quality of the interior of a structure. Ages ago it was usual to rely upon the stone or masonry arch in groined form, for fireproof floor protection; but the advent of the iron era has rendered obsolete the time-honored methods so long tried and so historically perfect, which to-day stand as firm as they were centuries ago, but which the spirit of the age has discarded. We have learned to build, undeniably not so permanently, but certainly much cheaper than our ancient predecessors; and the problem now is, to produce the result required with the use of the least amount of material and in the shortest space of time. The use of iron beams for floor construction dates from 1820, they being first introduced in England. Since their advent the necessity for some non-combustible material to fill between the beams has been felt to such a degree that numberless forms and composition of materials have been introduced, tried and found wanting in some essential particular. Hollow tile floor arches have withstood the tide of adverse criticisms for nineteen years, and to-day rank first as compared with every other form of material for this purpose. It is claimed for the system of floor arch construction the greatest strength with the least amount of space and material; it is but one-third the weight of brick or concrete arches, affords a level ceiling beneath, without the necessity for furring and lathing. The soffits of the iron beams are completely fireproofed, can be set in place in any season of the year, and are ready for plastering almost as soon as laid, and finally, all things considered, are the cheapest and most satisfactory form of construction known. To substantiate this and to present clearly the difference between the various systems of floors at present in use, there are shown in the cuts sections of a brick arch, corrugated iron and concrete arch, and a hollow tile arch.

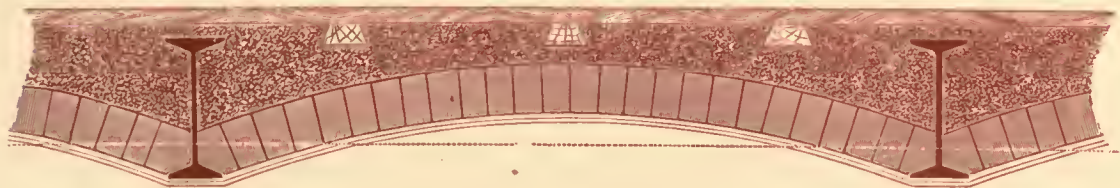
Upon comparison it will be seen that the weight saved by the hollow tile arch is a factor in structural economy, and at the same time a level ceiling is afforded without the use of



CONSTRUCTION OF A SPAN ARCH.



FLOOR ARCH.



OLD STYLE BRICK ARCH.



STANDARD HOLLOW TILE ARCH.



CORRUGATED IRON AND CONCRETE ARCH.

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surplus material. Another important feature is that the soffits of the iron beams are protected from fire with the fire-clay tile slab which can not be done with either of the other systems. Brick or concrete arches average seventy-five pounds per square foot; corrugated iron and concrete arches about the same; while the hollow tile arch averages with concrete but thirty-five pounds per square foot, thus affording a saving in surplus weight of material of forty pounds upon each superficial foot of floor surface. This saving in favor of hollow tile arches is of sufficient magnitude to allow considerable reduction in the weight of beams, thickness of columns and width of foundations of a building, as compared with the other methods.

Floor arches, to be satisfactory should be made of the best quality of fire-clay, mixed with a small percentage of potter's clay. The tiles should be free from cracks or defects affecting their strength to sustain weight, and should in all cases be capable of sustaining, after being set in place, an equally distributed load of five hundred pounds upon each superficial foot of surface without deflection. Properly constructed, portable centers are required to set the tile arches, and these should remain in place at least twenty-four hours after the arches are set, before being "struck." The *vousoir* or butment pieces, being those next the beams, are formed in such a manner as to support the flat beam tile. These butment pieces should be carefully set, and should be made to rest squarely upon the flange of the beam; each section or piece of tile forming the arch should be of such shape as to make it impossible to dislodge any one piece from its position by contact from the top—in other words, should be key-shaped. The last or center piece is called the key, and upon the setting of this piece the strength and solidity of the arch is largely dependent; it should always be made to fit tight in its place, and in no case should a joint exceeding one-half inch be permitted. In laying the tiles, a mortar composed of lime mixed up with coarse screened sand, in proportions of four to one, and richly tempered with hydraulic cement, should be used. This makes a strong mortar, and works well with the tiles. Usually the tiles are shoved to place with full horizontal joints, and butt joints left dry. In cases where there is no plastering to be applied, the butt joints should be flushed up while the tiles are being laid. In all cases, the tiles should be laid to break joints alternately, one with the other. The drawings of the arches represent the tile as filling the beams within one inch of the top. The object of this is to afford a chance for the usual wooden floor or furring strips to be attached, by means of a cleat nailed to the furring strip, and caught under the top flange of the beam. It does not follow, however, that all arches must be laid in this manner, as we frequently set ten-inch arches between six-inch or seven-inch beams, the only difference being that the "butment" piece is made to conform to the required shape to fit the beam. When desired to attach iron or wood work to the soffits of the floor arches, slot holes are punched in the tiles, and T-head bolts are inserted and secured. Variations in the spans from center to center of beams are arranged for by using with the arch, as necessity may require, half intermediate tiles, and several sizes of key tiles.

Plastering can be applied directly on the surfaces of the tiles, in the order of one thin

scratched, and one brown coat before applying the hard finish, so as to form a perfect work. This, however, on the tiles should cost no more than the ordinary two-coat plastering, for the reason that there is no mortar wasted in the clinch, as is the case in plastering on lath. Prominent plasterers have stated their preference in favor of plastering on any kind of tile work as compared with lathing, and no extra charge is ever allowed. Hollow tile arches, when finished in place, should be left straight and true upon the under side; but no pointing up or filling of butt joints is necessary, for the reason that the plaster coat is benefited by such roughness. In 1886 the large span hollow tile arch for breweries, malt-houses and such structures was introduced.

Partitions dividing the various floors of a building into compartments are, perhaps, next in importance to the floor construction in the necessity for fireproof treatment. No building can be considered safe from the injurious effects of fire, built with partitions constructed in the ordinary manner, with wooden studs covered with laths, even though the floors should be fireproofed. The combustible nature of the stud and lath partition is so great that the entire structure would be seriously injured should a fire once get fairly under way. Hollow tiles are now conformed to the requisite shapes, to enable one to build fireproof partitions only three inches thick, that are in themselves as proof against fire as the best twelve-inch brick wall. The advantages claimed for hollow tile partitions above all other methods are: Greatest strength, with the least amount of space and weight; absolute indestructibility by fire; sound, vermin and rat proof; perfect surface for the receipt of plaster, and adaptability to the use of the architect, it being easy to accommodate tiles to all the various angles and returns of a building without increasing the expense.

The tiles are laid in regular courses, twelve inches high, to break joints, thus making a firm and substantial wall, and accounting to a great extent for the wonderful strength of the light partitions. Mortar, composed of rich lime and coarse, sharp sand, is used to lay the tiles for partitions that are built in the interior of buildings; but rich cement mortar should be used wherever the tiles come in contact with the weather. In building the tile partitions, wood bricks are set in the vertical and horizontal joints to afford nailing surface for the architrave, base, wainscot, and whatever necessary. It has been urged against hollow tiles that the difficulty of driving nails into them acts as a disadvantage, and reference is made to partitions composed of soft, spongy composition, such as lime of teil and cinders and terra cotta lumber, the claim being that no wood bricks are necessary. While the fact is acknowledged that it is possible to drive a nail into the materials mentioned, experience has shown the folly of relying upon a nail driven into a substance without fibre, particularly when done with the intention of securing woodwork. In fact, so-called terra cotta lumber walls are all built at this date with wood jambs, studs and blocks, as it has been found impracticable to rely upon soft-burned clay tiles as a nailing ground. Therefore, the hardness of hollow tiles is no disadvantage to them, but rather in their favor, particularly as it is a guarantee of strength and lasting qualities; and all danger from frost or dampness during construction is obviated, as the hard-burned tiles are not perceptibly affected by the elements.

At all openings in the partitions 2x4 wood frames are set, to stiffen the jambs and afford grounds for the plastering, and also for the attachment of the architraves. In all buildings designed for the use of hollow tile partitions, provision should be made for the attachment of picture moldings, which are not only a most useful addition, but at the same time add much to the finish of a room. The partitions being built with the hollow spaces running vertically, afford ample opportunity for the introduction of flues for ventilating, heating, etc.; also for the concealment of gas and water pipes, which are built in the hollows of the tiles, while electric wires, speaking-tubes, etc., can be disposed of in the same manner. Tests of the strength of such partitions have been made. In one instance a four-inch partition, twenty feet long and one hundred and thirty-two feet high, without extraneous support, in the Calumet building was tested. On another occasion a wall thirty feet long and twenty-two feet high required some twenty-two feet of the wall by eight feet high to be cut out, and to test the solidity of the wall, it was done without shoring up the fourteen feet remaining above the new opening for doorway, and without a crack appearing in the plastering.

Roof construction is, perhaps, the most important external feature of the structure, and often receives but little attention. A good fireproof roof is certainly a great desideratum, but how few really non-combustible roofs are erected? It seems to be generally conceded at this time that a building in order not to burn should be thoroughly fireproof in all its parts, but reports are constantly made of buildings designed complete throughout the interior of non-inflammable material, but inclosed with a roof constructed principally of wood.

In most buildings of importance, it becomes necessary to construct a false ceiling between the top floor and roof, to disguise the pitch of the roof. Usually this ceiling has no other purpose than simply to make a straight surface for the plastering, there being no necessity for any more strength than just sufficient to sustain itself with plastering, etc., therefore the simpler and lighter this ceiling can be made, the better. A ceiling formed of one-half inch thick fire-clay tiles, with grooved edges, resting upon 1x1-inch T-irons, is fully fireproof. These irons are set twelve inches from center to center, and will span up to seven feet. They are in turn supported by an L-iron, running at right angles with themselves. The L-iron is punched at regular intervals of twelve inches with holes, the same section as the T-iron, just large enough to permit the small irons to pass through, thus holding them securely in place without the necessity for bolts, rivets or screws. The L-irons are in turn supported, as the case may be, either from the soffits of the roof rafters or trusses, with light one-half inch rods attached to the same, and furnished with nut and thread, so that any settlement or irregularity in the level of the work can be adjusted.

Another form of false ceiling is constructed by using 3x3 T-irons, set fifteen inches from center, and filling the same with flat tiles bedded in the flange of the T-irons, with a fire-clay slab supported below the iron. This ceiling is light and strong, and, if necessary, could be used as a floor for light purposes.

Iron enters largely into the structural economy of modern fireproof buildings, and assumes important relations to the constructive detail of the work. Upon the economical use

of iron much is dependent to obtain the result required at the minimum cost. Iron has been an active agent in the past thirty years in the building arts. It has enabled the architect to accomplish wonders in the erection of buildings, when the greatest factor of strength within a limited space has been required, but valuable though it is, as a constructive agent, it is not a fireproof material, in the sense that it will resist a severe heat without injury. Therefore it has been determined that where iron is used as a building material, it should be protected from injury by fire with a non-combustible material in such manner as to preclude the possibility of fire heating it to an extent sufficient to warp or twist it out of shape. To this end all the exposed portions of the iron columns, girders and roof trusses of a building should be thoroughly protected by being incased with a covering of hollow or solid tiles. The special drawings represent two forms of iron columns, one inclosed with two-and-one-half inch hollow tiles, and the other with one-and-one-quarter inch solid fire-clay tiles. Either system of fireproofing is suitable, but the solid form is used principally, for the reason that it takes up much less room than the hollow tiles. The solid tiles are made of fire-clay, molded to suit the section of the column incased; an air space of one inch is left next to the column, to act as a non-conductor. The tiles are usually made in two pieces, and are laid to break joint on each alternate course, the different pieces being bound to each other with small cast-iron clamps, set in the ends of the tiles, completely securing the tiles in place, without the necessity for tapping or drilling the iron column.

Wood as a building material is pre-eminently the most useful of all constructive substances, being easily worked and rapidly applied, and had it fire-resisting qualities would be perfect. Within the past five years, experiments have been made with a view to perfecting a method of building by using wood as the structural agent, in combination with hollow tile. The results obtained have been unexpectedly successful, and it has been demonstrated that a wood building can be made practically fireproof if erected upon the plan outlined in the engravings. For flue linings and chimneys these hollow tiles are well adapted. Vitrified tiles are coming into use for window sills and paving blocks.

Terra cotta lumber is not what many know as terra cotta (a material used almost wholly in the form of ornamental tiles), the difference between the two being really a difference between the useful and the ornamental. Terra cotta lumber, though not in one sense lumber at all, is yet so superior a substitute for what is ordinarily known as lumber, that its name is not inappropriate. The name is given to a composition of clay and sawdust, fashioned into hollow forms, burned like common bricks, in which process of burning the sawdust is consumed, leaving a porous, earthenware tile, hard, absolutely fireproof, remarkably soundproof, dry, light and of great elastic strength and durability, and adapted by its every characteristic to supply the want which is more and more felt among the owners of buildings, both in and out of large cities, for a cheap, fireproof material for floors, partitions and roofs. Being porous it has expansive elastic properties, which a solid, dense material like brick or a hard brittle material like porcelain can not have. The clay and sawdust being thoroughly mixed, the latter in proportions varying from one-third to one-half as porosity is desired, is

wholly consumed in the process of burning, and the clay, meanwhile, stiffens and hardens, so that as the grains of sawdust carbonize and reduce to an almost invisible ash, the cells are left perfect and the mass as exactly porous as sponge. This porosity means elasticity, a springy strength and lightness. The difference between terra cotta lumber and brick is shown by the fact that terra cotta lumber may be cut with a common carpenter's saw or may be pierced with nails or screws. Its chief distinction from the hard tiles or hollow pottery, are, first, in not being brittle, and second, in its lightness.

Asbestos is a great fireproof material. Encasing furnace pipes it prevents, effectually, the possibility of fire from such a source, and used instead of common building paper as sheathing, it also defends from the attacks of external fire; but only in its fibrous state is it a pure non-conductor of heat. For firemen complete suits of asbestos fireproof cloth are made. Aprons and insulated coverings for the entire body are now constructed of asbestos. For domestic use sadiron holders of asbestos may be had, and with these the grasp of the iron, however hot it may be, never causes pain or burning. Plumbers welcome asbestos cloth for joint wiping, and larger holders intended for use by smelters, molders and workers in metal generally are among the most recent uses of this mineral. Masks are made of asbestos, which are fireproof, and the heat from the hottest fire is said not to penetrate to the skin. Air is drawn from beneath the mask for breathing, so that the burned or flame and smoke-laden atmosphere is not inhaled. Asbestos mittens to guard the hands are made for assayers, refiners, etc., and, armed with a pair, the artisan or worker can grasp hot irons, crucibles and the like without discomfort. The mittens are sufficiently pliable to permit of small objects being readily picked up and held in the hand wearing them.

Asbestos is supposed to have a great future as a lubricator for machine bearings. Used in paint it reduces the liability to fire, and as a roofing material, it receives sparks or cinders hospitably. Its application to the new French building material "staff" will render this imitation stone absolutely fireproof. The asbestos gas fire is one of its extraordinary applications as in the instantaneous Water Heating Company's grate, and in that of the Backus stove. The heat is derived the instant the gas is ignited, and increased as the parts become more thoroughly warmed. The flame coming in contact with the heavy fire bricks, causes an intense heat to emanate therefrom fully equal it is said, to a hard-coal grate fire. Its use also insures good ventilation, and dispenses with the dirt and annoyances usually found with great fires. The gas distributed through an atmospheric burner comes in contact with the asbestos fibre, which makes a most cheerful fire. Should the asbestos at any time require renewing, it can easily be done without removing the frame, by means of their patent adjustable clamp of fibre asbestos. The frames are finished in various styles and present a handsome appearance.

Magnesia insulation and covering is a new non-conducting material composed of 6.84 asbestos fibre, 87.83 pure carbonate of magnesia and 5.33 of other minerals and moisture. It will stand over two thousand degrees of heat, and is especially recommended for steam and furnace-pipe covering.

Only a few years ago the question of using glass tubes in the construction of houses was

seriously entertained, the question of expense being the principal exception to its practical adoption as a building material. The melting of glass into cubical or ornamental shapes is much easier and less expensive than the manufacture of terra cotta into such shapes, but the preparatory work on composition of sands, etc., and the later annealing process brought up the expense to such a pitch as to place its employment out of the question. Modern methods of manufacture may, however, remedy this matter of expense; it is already stronger than granite, annealing may render it tougher, while its adaptability to inside and outside work warrants the belief that it will take the place of brick and stone, and with paper doors, floors and window frames and sash, take the place of the age of stone and clay. Legend tells of the lost invention of malleable glass. Tiberius discouraged a genius who found the secret by beheading him, fearing that innovation would reduce the value of gold. It is also recorded that Cardinal Richelieu was presented with a bust of malleable glass by a chemist, who purposely let it fall into fragments, and mended it before his eyes with a hammer. The inventor was promptly rewarded by perpetual imprisonment, lest his ingenuity would ruin the vested interests of French manufacturers. But if glass may not ape the metals in malleability, it may imitate them in another respect just as important. M. de la Bastie has, within a few years, introduced into Europe a transparent glass, which, he claims, may displace cast iron. If it meet his expectation, it will mark a new era in glass manufacture. By his process, railway sleepers, fence posts, drain pipes, tanks, etc., are cast in molds and so toughened by a bath in oils as to be stronger than iron, though it is much lighter and costing one-third as much.

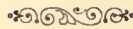
In June, 1887, an architect of Chicago asked the question, "If fastest passenger trains thunder across the continent on paper wheels exposed to storms, winds, changes of temperature, why may not the same material easily lead itself to statical conditions of our houses?" D. H. Burnham put the question before the state association of architects, and in answering it pointed out the fact that then paper had been used as siding here and for doors and piano casing in France, though ignored for shingles, floorings, architraves, for which it is eminently fitted, since it can be molded, cut, nailed, handled and fitted with more ease than any other material known to the builders' art. S. M. Randolph and N. S. Paxton speak highly of the flexible paper sheet, pressed, dried and made ready for the builder. The latter points to its continuity of surface, its strength, its capability of being converted into a waterproof, non-resonant, incombustible, temperature-proof material and to its cheapness, and all bear testimony to its possibilities in decorative work. As a sheathing for brick or wooden walls it has long since proven its claims to utility, for it is held that an eight-inch wall, lined systematically with paper, does more to repel, to keep out, the extreme cold of winters and the intense heat of summers, than an extra eight inches of brick and mortar. Paper gas pipes are made from strips of manilla paper in width equal to the length of the pipe to be made, which is passed through a vessel with melted asphalt, and then wrapped firmly and uniformly around an iron core until the required thickness is attained. The pipe is then subjected to powerful pressure, after which the outside is strewn over with sand and the whole

cooled in water. The core is then removed and the inside of the pipe coated with a water-proof composition. These pipes are claimed to be perfectly gas tight, and very resisting to shocks and concussions.

"Staff" is the French name for a comparatively inexpensive building material, consisting chiefly of a composition of cement and gypsum. It may be molded into solid blocks and used as stone or brick, or it may be used as a plaster over wooden surfaces. In any case, it may be colored or polished to simulate the finest building material. It was first used in the construction of some of the buildings of the Paris Exposition of 1889, and was not the least object of interest to the world of admirers of French originality gathered there. In March, 1891, this composition was made known to the people of the United States through the press. Only a little while before did American architects become acquainted with it, and not until the close of March, 1891, did the architects of the Worlds' Fair buildings determine to use it instead of stone, brick and terra cotta.

The nature of the fire-danger of all heating apparatus where flues or pipes are laid through or near woodwork seems to be misapprehended by many who might be supposed to be well informed upon such a subject. One editorial writer, addressing an audience of artisans, compares the methods by which wood is set on fire by steam or hot-water pipes, or hot-air flues, to the drip of water falling always upon the same place, gradually wearing the hardest rock; "thus," he adds, "a comparatively low degree of heat acting for years upon wood is able to first char, and then, under certain external influences, to set it aglow, and finally in flames." If his premise that the temperature to which pipes and flues are raised is never high enough to set wood afire, is true, and it doubtless is not far away from verity, then the steadiness of the dripping would insure safety, no matter how long continued. Now, the manner in which a temperature too low to start rapid combustion in wood operates in originating a fire is by first reducing the oxide of iron (rust) to a metallic condition. This is possible only under certain external conditions, among them a dry atmosphere. Just as soon as the air is recharged with moisture the reduced iron is liable to regain, at a bound, its lost oxygen, and in doing so to become red-hot. That is the heat that sets the already tinderred wood or paper ablaze. Where there is no rust there is no danger from fire with a less than scorching temperature in the pipe or flue. Modern conditions tend to fire. Heating and lighting are carried out on a scale hitherto unknown. Members of a family and household help, merchants, clerks, tradesmen and professional men, move around much faster than in former days, so that amidst all this life dangers of fire accumulate and the means of avoiding and combating such dangers increase.

CHAPTER XIII.



JOURNALISM, LITERATURE, ETC.

HONORABLE journalism has had not a little to do in making Chicago what it is to the architect and builder. From that day in November, 1833, when the *Chicago Democrat* was issued, to the present time, the newspaper has accomplished for the city what no other institution could perform, or is capable of accomplishing to-day. After the war, trade journals came into existence, and each took an important part in bringing before the public the special views of the tradesmen in whose interest such journals were published. Diminutive and cautious at the beginning, they spread out, so to speak, and became the teachers of advanced ideas and the suggestors of forms and styles. After the great fire of 1871, they urged the tradesmen to better methods and pointed out the nature of improvements. While engaged in this service, hundreds of advertisers were enabled to place the products of factory, foundry and shop before the very readers they wished to interest, and the trade journal became a useful advertising medium, as well as an expounder of trade methods. In 1882, when the shadow of the panic was dissipated, a new race of journals and journalists came into existence, but not until the close of the decade did they multiply. To-day there are published here no less than thirty-eight journals connected with the building trades. The number includes only a few of the older journals. All are named in the following list: *American Artisan, American Building Association News, American Contractor, American Engineer, American Furniture Gazette, Architects and Builders' Edition of the Scientific American, Brick Roadways, Brickmaker, Budget, now Northwestern Architect, Carpentry and Building, Chicago Real Estate Review, Domestic Engineering, Economist, Electrical World, Engineering, Engineering News, Engineering Record, Inland Architect and News Record, Iron Age, Ironmonger, Journal of the Association of Engineering Societies, Lumber Trade Journal, Master Roofer, Master Steam Fitter, Metal Worker, Metall and Eisen Zeitung, Monumental News, National Builder, Northwestern Architect, Northwestern Lumberman, Paint, Oil and Drug Review, Real Estate and Building Journal, Rights of Labor, Sanitary News, Timberman, Weekly Stationary Engineer and Western Electrician.*

The *Wood Worker, Clay Manufacturers' Engineer, Careful Builders, International Fire Proofer, Industrial World and Iron Worker* and *Marble and Granite Reporter* were included in the list of journals in 1890, but are absent in the present list.

The *Real Estate and Building Journal* reached No. 10 of its seventh volume March 2, 1872, when Hungerford & Smith were publishers, with offices at 17 to 23 Harrison street. Its suspension from July 9, 1871, to March 2, 1872, was solely due to the fire which destroyed the new office at 160 Washington street. In May, 1888, the Chicago Real Estate Board purchased from B. B. Wiley the files of this paper for 1866, 1867, 1868, 1869, 1870 and 1871. Editor S. Myers, in noticing the progress of this paper, December 28, 1889, said: "The *Journal* has now completed the twenty-third year of its existence. Under the present management it has prospered for eight years, and has been the ready servant of Chicago's real estate agents and property owners. It has always been honest, if not brilliant and dazzling. During the last twelve months its editorial and record columns will compare favorably with those of any similar paper published in the United States. The *Journal* always pays its debts and never has had any difficulty with any man who treated it honestly and fairly. The publisher of the *Journal* is not unmindful of the kindness and generous support given it through all these years by the real estate men. He will never leave the old fort until a safe, trustworthy guard shall be ready to take his place. May success and happiness follow those who have fed the garrison in the fort and cheered its defenders."

The *Land Owner* reached No. 10 of Vol. IV, in October, 1872. This was an illustrated journal dealing with real estate, buildings and improvements, and its later numbers contain many excellent illustrations of the buildings erected after the fire. J. M. Wing was the publisher.

Chicago Illustrated was issued by J. M. Wing & Co., in October, 1872, in connection with the *Land Owner*. Excellent representations of the buildings erected during the year after the fire are given. The *Manufacturer and Builder* was issued in January, 1869, by Charles C. Western, who died in August, 1871. This journal was issued at New York, but claimed a large number of readers here. The *Art Review* was issued in April, 1870, from the office 115 Madison street, by E. H. Trafton. It was the organ of the Chicago Academy of Design, a society which erected the large five-story Cleveland stone building on Adams street, west of State street, that year.

The *American Builder and Journal of Art* appears to have supplanted the *Art Review*, for in November, 1870, it is found to be the official journal of the Academy of Design. The *American Builder*, a monthly magazine, was issued from the office, 151 Monroe street, by Charles D. Lakey, as early as 1871. The *Mechanic and Inventor* was published in 1871 by Thomas S. Sprague, at 154 Madison street.

The *Northwestern Lumberman* is the oldest lumber paper in existence, the *Lumberman's Gazette* of Bay City being next, and the *Timber Trades Journal* of London, England, third in order of age. The first number of the *Lumberman* was published in Muskegon, Mich., in January, 1874, and the following month was moved to Chicago, which was then as it is now, the largest lumber market in the world. The paper was published as a monthly until January, 1876, when it became a weekly. For several years it struggled for an existence, but fortunately its days of struggle are gone.

W. B. Judson, who started the paper, is its present owner, and Met L. Saley, who edits it, has held that position for nine years, having served three years on the editorial staff before assuming editorial charge.

It is the aim to make the journal a lumber newspaper. Its paid correspondents, located at every manufacturing and distributing point of importance, number more than a hundred. These correspondents are instructed to use the wire freely when necessary, and the telegraph bills of the paper would probably surprise the great number of people who may be of the opinion that only the daily papers avail themselves of an extensive telegraph service. A feature of the paper is its statistical work. From no other source can be learned the annual output of white pine lumber and shingles. These statistics are accepted as authority by the heads of the different government bureaus, and by statisticians and writers on industrial subjects everywhere. Hardly a week passes that the editor is not asked for special information concerning the lumber industry by men who have in view the preparation of magazine or newspaper articles. The history of the paper is, that it has been a creator of methods and opinions, employed and entertained by lumbermen rather than a looking glass in which they were reflected. It aims to be able, reliable, progressive and independent, and it has so far succeeded as to at least win the confidence and patronage of the most extensive, influential and intelligent operators. The paper is made up on the elastic plan, and varies from forty-eight to sixty pages weekly.

The *Lumber Trade Journal* does not claim to be first in the present, neither does it claim to be first in the past. There is no declaration of policy or purpose mentioned on its editorial page. It is all in the name of the paper. This paper is a semi-monthly lumber journal, and has been printed regularly for nine and a half years in Chicago, its present home and birth-place. The journal has only had one home so far in its history, but it is particularly fortunate in the fact that it was born twice. The journal ambled along under the onus of a colored cover until June 1, 1887, when Walter C. Wright and George W. Hotchkiss became proprietors of the paper, and it was then that it laid aside the colored cover and took on prosperity. Since that date it has increased from a twenty to a fifty-two page paper.

George W. Hotchkiss was the best known lumber writer in the United States, one of the editors of the *Encyclopædia Britannica*; for six years, the secretary of the Chicago Lumberman's exchange. Walter C. Wright had been for several years the secretary of the National Association of Lumber Dealers. It is personal popularity, business ability and extensive acquaintance which fitted Mr. Wright to assume the business management. Messrs. Wright & Hotchkiss made a strong team, and they built up an independent paper. They made a readable paper, and the great lumber public appreciated their efforts. Mr. Wright is the present manager and Mr. Hotchkiss has retired on account of ill health. The field which the *Journal* covers is as broad as the territory in which saws are heard. It is considered the technical exponent of the entire trade north, south, east and west.

The *Timberman*, a weekly publication, devoted exclusively to sawmill, planingmill and wholesale and retail lumberyard interests, north, south, east and west, is one of the best

weekly trade papers in the United States. While this very successful publication has only existed in its present form since July, 1886, it is the legitimate successor and lineal descendant of the first lumber paper ever published, namely, the *Lumberman's Gazette*, for many years issued at Bay City, Mich. The *Gazette* was first issued in the early seventies, at Bay City, and was published there for many years, until it was consolidated with the *Timberman*, of Chicago, July 10, 1886. The *Timberman* has had a steady growth and remarkable prosperity from its inception, and has a record of having paid its way from the first issue. J. E. DeFebaugh, editor and proprietor of the *Timberman*, has been identified with the publishing interests all his life, has a wide and practical experience as a publisher, and has brought the *Timberman* to the front rank of trade publications by shrewd business methods and by giving his host of readers a paper, the contents of which are calculated to interest, instruct and assist in the conduct of the various branches of the great traffic in timber and lumber. From the first issue up to the present time the paper has had no change of policy or aim, and no change of management, and it has not yielded to the temptation to foster any one class of the fraternity to the disadvantage of the other, but has sought to aid all branches of the business throughout the United States. Among its subscribers are the owners of sawmills, planingmills, woodworking concerns, manufacturing establishments, general purchasing agents of railroads, contractors and builders, and others having interests in the various lumber markets throughout the states; and it is especially noticeable that in its editorial columns are given terse and pointed discussions of trade matters of vital importance. It is averse to long-winded topics on any subject, but endeavors to make use of its valuable space to convey information of a profitable character. It has no other aim than to be a newspaper. It does not try to please everybody, but aims to tell the truth without fear and without favor. The result of this policy has given it a large patronage, and it is universally acknowledged as one of the leading exponents and representatives of the lumber manufacturing and merchandising trades of the country. The *Timberman* is published weekly, 36 to 44 pages in size, from its spacious and convenient suite of editorial and printing rooms on the first floor of the Metropolitan block, 161 and 163 Randolph street, where the publisher is always glad to welcome the members of the lumber fraternity.

The *Sanitary News*, No. 1, Vol. I, was issued November 1, 1882, by G. P. Brown, from the office, 144 Monroe street. The editor promised to devote his pages to house building in its sanitary features, and to news items relating to house building in Chicago and throughout the country. This promise has been faithfully adhered to. The *News* is now strong and able.

The original prospectus points out that the intention of its projectors was to issue a number on the first and one on the fifteenth of each month, each to contain twelve pages, exclusive of pages devoted to advertising. In December, 1882, a paper on "practical house drainage," by J. J. Wade, appeared with illustrations and descriptions of Blair lodge and the new Board of Trade. In 1883 John K. Allen was associate editor, and Brown & Ansell printers. On March 7, 1885, it became a weekly journal, and the little daily edition from which the bi-monthly news was made up, ceased. Volume XI, bears the imprint of G. P.

Brown, publisher, and Henry De Witte, editor, the latter succeeding Allen in March, 1888. In October, 1888, Isaac E. Adams became proprietor, and in November, Slason Thompson's name appears as publisher. The Dearborn Publishing Company succeeded Thompson as publisher in January, 1889, and the annual subscription was reduced from three to two dollars. At this time A. H. Harryman succeeded De Witte as editor, later, that year, H. W. Culbertson was associated with Harryman in the editorial department, and on July 6, 1889, the name of Thomas Hudson appears as publisher, and in November, editor Culbertson retired, to establish the new journal, *Domestic Engineering*. On March 14, 1891, Mr. Hudson's lease of the *News* was annulled by agreement, and since that date it has been published by the Dearborn Publishing Company, of whom Andrew Young is president, O. C. De Wolf vice president, and W. A. Hamilton secretary and treasurer. The president is also manager, while Henry R. Allen is agent of the *News*, at London, England. The *News* is ably edited and a very popular journal.

The *Inland Architect and Builder* was established in February, 1883, with L. Muller, Jr., manager, and R. C. McLean, managing editor. In the salutatory the editors say: "Unlike many journalistic infants the *Inland Architect and Builder* makes its advent unheralded. The idea of its publication, however, was not suddenly conceived nor hastily matured. A careful canvass convinced its projectors that a periodical devoted to the interests of western architects, builders, house decorators, and those engaged in kindred arts, would be cordially welcomed and receive substantial support. We shall spare no endeavor to furnish valuable news and information to those in whose interests we publish, and to make our journal attractive in typographical appearance. If those interested, professionally or incidentally, in the planning, building or decorating of homes, or commercial or public structures, find this journal entertaining and a help to them, the aim of its projectors will be attained." In the next issue the valuable historical papers by the pioneer architect, J. M. Van Osdel, appear, but lectures and papers by W. L. B. Jenney, Louis J. Millet and others, were commenced in the first number.

The *National Builder* was established in Chicago in 1885. It is a monthly magazine devoted to the building interests. Each number contains a complete set of plans, mechanically correct and ready to build from. Thousands of dwellings are being built from plans presented in its pages, throughout the United States. These plans consist of colored elevations, complete details, specifications and estimate cost. The original editor, George O. Garnsey is still chief of its editorial staff. The book-publishing department of the *National Builder* is complete and extensive and is managed by Mr. D. G. Garnsey. James Hannerty is president of the National Builder Publishing Company. The editors and managers of this journal know Chicago thoroughly, and one, at least, belongs to that circle of architects who have aided in building up the city.

The *Building Budget*, precursory number, was issued in February, 1885, from the office of the Permanent Exhibit of Building Materials, then at 15 East Washington street, though printed outside until 1886. In March following, No. 1, Vol. I, bears the imprint of Henry

Lord Gay, who acknowledges the words of encouragement from the press and people of many sections of the country, and expresses his belief that the journalistic venture of February warranted success and justified him in continuing its publication. The *Budget* was issued as an aid to the Permanent Exhibit of Building Materials; it has grown up with that institution, and during the six years of its existence has contributed largely to the science and art of building and proven itself a *sine qua non* to the architects' and builders' circles. In its pages the progress of architecture, from the earliest times, is shown by words and illustrations. Well written editorials on subjects of interest to the architect and builder mark every issue; while excellent papers on ancient and modern buildings, sanitary engineering, labor relations and reports of meetings of the various associations of architects appear in its columns. This journal shows the enthusiasm of the editor in his work, and is characteristic of the Chicagoan who sees a great city of illimitable possibilities rise and still rising above the ruins of the village of 1871. In April, 1888, the office was removed to 63 and 65 Washington street as well as the Permanent Exhibit. The December (1890) number of the *Building Budget* contains the valedictory of its projector and editor. Referring to its beginnings he says:

"The literature of architecture in the West was relegated to the basest of private purposes and the *Building Budget* was therefore regretfully published, in order that the Institute of Building Arts might have an advocacy which was denied it among supposably respectable members of our profession. * * * * * It would, indeed, be a pleasure to continue the issuance of a periodical with a record so happy, and but for the fact that public spirit must be founded on private right—that the citizen owes it to the public to first set his own house in order, the editor would willingly dedicate the remainder of his life to the unprofitable but honorable services of journalism." At this time the *Budget* was consolidated with the *Northwestern Architect*.

The *Brickmaker*, No. 1, Vol. I, was issued September 16, 1889, by Charles T. Davis, being at that time the only journal in the world devoted solely to the interests of brick manufacturers. The idea of its establishment was entertained August 27, 1889. The first edition or issue was 10,000 copies. The organization of the National Association of Brick Manufacturers suggested such a journal to be at once its official paper. The idea of publishing such a paper was fortified by the fact that important contributions to the history, science and art of brick manufacture would find place in its columns. The editor's salutatory was supplemented by an article, prepared by Mr. Frey, of Bucyrus, Ohio. He made the ingenious point that the *Brickmaker* belongs to the city where bricks had the first crucial test, and were tried in a consuming element which melted metals and even granite into a molten, fluid mass. Thirty-five years before, Mr. Frey commenced to make brick-molding machinery a study, and on this occasion drew a pleasing picture of advancement in his art and appliances used therein. The *Brickmaker* has won an enviable position among the trade journals. Messrs. Davis & Doyle may take pride in it, and the manufacturers congratulate themselves on the possession of such a journal.

Domestic Engineering, Vol. I, No. 1, was issued October 17, 1889, by H. W. Culbertson

from the office in the Rookery building. The salutatory pointed out the mission of this journal in the following words: "*Domestic Engineering* aims to be a useful and helpful assistant to everyone engaged in the business of plumbing, heating, lighting and ventilating. To give plain, practical and useful hints and suggestions to its readers and to become a medium for the communication of ideas relating to these matters." The aims set forth by the editor have been observed, and to-day *Domestic Engineering* is an important visitor to members of the Plumbers' association.

The *Architectural and Building Monthly* was issued in November, 1890. This new magazine contained sixty plates.

The *Clay Manufacturers' Engineer* was issued at Chicago in February, 1890, by Myenberg & Co., with F. P. Myenberg, editor, as a tri-monthly journal devoted to the interests of clay-workers in all branches, clay-working machinery, designs, etc.

The *Northwestern Architect*, of Minneapolis, Minn., has, so to speak, moved to Chicago, and, incorporating with the *Building Budget*, holds its old name. Since the beginning of the two journals, each worked harmoniously and effectively in the interest of architects and builders. In coming to Chicago the *Northwestern Architect* has only commenced an era of flight toward the great central city of the United States, for within two years it will be possible to chronicle that the greater part of all excellence in literature, art and commerce within the Union has migrated hither and found a congenial home.

The *Paint, Oil and Drug Review*, No. 4, Vol. X, is dated July 23, 1890, D. Van Ness Person, publisher. The *Painters' Journal*, No. 5, Vol. III, was issued in March, 1889, by B. F. Thomas, from the office, 323 and 325 Dearborn street. The *Chicago Paint and Varnish Journal*, No. 5, Vol. II, is dated September, 1890. Henry Dean was then editor and M. E. Snowden manager, with office at 170 Van Buren street. The *Polytechnic* is the name of a new journal devoted to the interests of manual training schools.

Literature aids journalism. Within the last few years authors have been produced, as it were, from the offices of architects and engineers, the mills of the lumbermen, the yards of the brickmaker, the quarries of the stone men, the shops of the plumbers and the lodges of labor unions. Activity in the industrial branches led to activity in journalism and literature, until every branch of trade and labor was given a periodical or a volume. Frederick Baumann's work on isolated piers was a most important addition to the literature of the building arts. In 1887 the history of the great strike and lock-out was written by James C. Beeks, of the *Times*, under the title "30,000 locked out." His reports on the strike were the most complete published. A. L. Tuckerman's short history of architecture may be classed as a local work. "Suggestions concerning plumbing" was published in 1887, by the *Sanitary News*. This pamphlet was well received. N. Clifford Ricker's manual on elementary graphic statistics and the construction of trussed roofs is an important work. In 1889 a valuable work on the manufacture of bricks, tiles and terra cotta was written, by Charles T. Davis, and published at Philadelphia. It contains over five hundred pages, and is as entertaining as it is instructive, being at once a history and a teacher of methods. "Brickmaking and burning," by J.

W. Crary, Sr., was issued in 1890, by Randall & Co., of Indianapolis, Ind. It is the production of a practical brick manufacturer. The American Contractor, the Architects' and Builders' Pocket Companion and Price Book and many other hand books connected with the trades, together with artistic trade catalogues are valuable additions to the literature of the building arts.

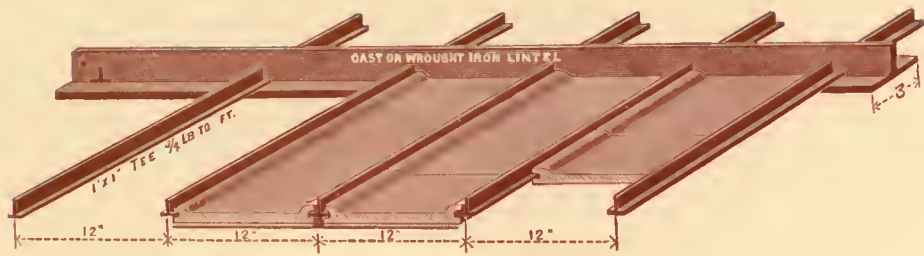
Charles H. Blackall's manual for architects was issued in 1890; while George O. Garnsey's dictionary of terms used in architecture and the building arts was issued in 1887. J. H. Carpenter's "Hints on building" is another useful publication. Peltzer's Atlas of Chicago, issued in September, 1872, was received with favor in real-estate circles. In October of that year, however, J. H. Rees & Co. enjoined Peltzer, Fox & Hoffman, the publishers, it appearing that Rees, Pierce & Co. perfected an atlas of 280 maps with copious notes before the fire, and after the fire merged their collection with that of Ogden, Sheldon & Co. The joint collection formed the only reliable map of subdivisions in the city. Permission was granted by them to the Board of Public Works to make a copy for the exclusive use of the board, and this work was done by Peltzer and others, who, later, entered on the publication of such maps. Joyce's atlas was published in 1879. Greeley-Carlson's new atlas of Chicago, published by R. R. & R. H. Donnelley, is a copy, in fact, of maps of additions and subdivisions made before the fire by W. P. Davie, Ogden, Sheldon & Co., and Rees, Pierce & Co., together with elaborate plats of additions and subdivisions made since the fire. It is an extraordinary atlas, Vol. I covering the original town and early additions.

The part taken by the great dailies of the city in recording the history of city houses can not be overestimated. From the days of the old *Democrat* to those of the *Evening Post*, the Chicago newspapers form a contemporary record of building operations, speculative and real. There is scarcely an issue of any of the great dailies that does not contain the history of some building project in one of the three great divisions of the city. Take the report of the *Evening Journal* for 1867 as an example. It is a record of real operations in building up the city:

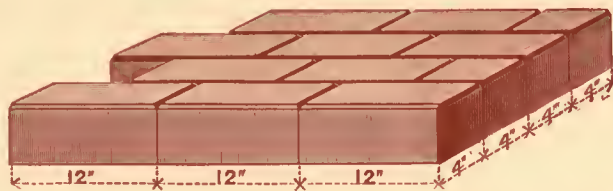
"Our annual review of building operations in Chicago will fill our readers with astonishment. They do not need to be reminded of the severe check that building enterprise received at the hands of the eight-hour strikers last spring. Everybody remembers how effectually that unfortunate movement put an extinguisher upon the aims and efforts of builders, and how for weeks the sound of the hammer and the trowel was unheard in Chicago. It was predicted that Chicago could not recover from the blow thus inflicted, at least, not during the present year. The building enterprise of our city has been a marvel to outsiders for years. For five years in succession our reports show that buildings, public and private, have been erected in Chicago to the aggregate value of \$7,000,000 per annum. Despite the temporary check sustained last spring, and all the wise predictions to the contrary, notwithstanding, the capitalists of Chicago have been heard from. Gallant Phil Sheridan swept down like a thunderbolt from Winchester and turned a disastrous defeat into a brilliant victory. The capitalists of Chicago, undismayed by a temporary reverse, have rallied in their strength and

achieved a prouder record this year in the matter of new buildings than in any previous year. The total value of buildings completed, or in process of construction the present year in Chicago, will reach \$9,000,000. As in preceding reports of this kind, our figures are based upon the known cost of the work of a few of our leading architects, a moderate estimate of the work of all the other architects not enumerated, and the estimated value of dwellings, etc., erected by parties without the aid of architects. Last year, when eight of the principal architects' reports footed up \$4,000,000, we lumped the work of all other architects at \$1,000,000, and the value of all the buildings erected by private parties at \$2,000,000. These estimates, it was conceded by competent judges, were considerably inside the actual figures. This gave a total of \$7,000,000. This year the work of seven architects exceeds \$5,000,000, and there can be no question that the value of the work of all the others, and of buildings put up without their assistance, will swell the figures to \$9,000,000. The following are some of the principal jobs of the leading architects. There are others equally prominent, whose figures we have been unable to obtain. Among these are Messrs. Randall and Dixon, both of whom have done a very heavy business:

“W. W. Boyington designed the following buildings: A block of four marble-front stores, 120x170 feet, on Randolph street, for Bowen Brothers, five stories high, Italian style, at a cost of \$155,000. A block of two marble-front stores, 48x90 feet, corner Wabash avenue and Randolph street, for McKay Brothers, five stories high, Italian style, at a cost of \$50,000. A block of two stores, marble front, each 25x110 feet, on State street, for H. & A. Keeps, four stories high, Italian style, at a cost of \$35,000. One store of pressedbrick, 30x100 feet, on River street, for Mathew Laffin, four stories high, plain style, at a cost of \$10,000. One store of pressedbrick, 30x100 feet, on River street, for Joseph Woodruff, four stories high, plain style, at a cost of \$10,000. A block of stores of pressedbrick, 24x100 feet, on River street, for Henry Fuller, five stories high, Italian marble, at a cost of \$60,000. A block of two stores and offices, marble front, 45x100 feet, on Madison street, for J. V. Farwell, five stories high, French style, at a cost of \$30,000. A block of stores, offices, etc., marble front, 35x100 feet, on Madison street, for the Young Men's Christian association, five stories high, French style, at a cost of \$130,000. Farwell hall, of artificial stone, 82x121 feet, on Madison street, for the Young Men's Christian association, five stories, French style. Oriental building, marble front, 75x120 feet, on La Salle street, for George E. Walker, five stories high, Oriental style, at a cost of \$125,000; the Oriental building, as a business office building, has no superior in point of style or permanency, and in it is the most extensively finished Masonic hall in any country. It is finished in the richest style. It is said to fully equal in richness and completeness the Oriental buildings on exhibition in Paris. Alterations, marble front, 40x100 feet, on Dearborn street, for Lewis, Page & Co., four stories high, French style, at a cost of \$6,000. Alterations of brick, 20x100 feet, on Washington street, for Gookins & Roberts, three stories high, plain style, at a cost of \$7,000. Alterations of brick, 50x100, on Washington street, for Mason & Miller, three stories high, at a cost of \$20,000. Johnson's hall, artificial stone, 40x130 feet, on Wabash avenue, for Mrs. Johnson, one story high, plain style,



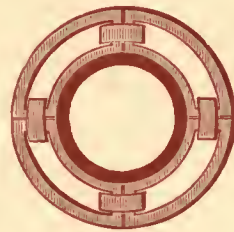
CONSTRUCTION OF CEILINGS.



PAVING TILE.



PLAN OF SOLID TILE COLUMN COVERING.



PLAN OF HOLLOW TILE COLUMN COVERING.



SOLID TILE FIREPROOF COLUMN.



HOLLOW TILE FIREPROOF COLUMN.

LIBRARY
OF THE
UNIVERSITY OF ILLINOIS

at a cost of \$11,000. Museum and library, of brick, 50x55 feet, on Wabash avenue, for the Academy of Sciences, one story high, plain fireproof, at a cost of \$35,000; this is a fireproof building, with a plain exterior, but well finished internally, and containing a museum the whole size of the building, with two tiers of galleries, all properly fitted up with show cases and alcoves, together with a large library (finished with black walnut cases), and other business and reception rooms, and a taxidermist room in the basement. A dwelling of marble, 25x42 feet, on Wabash avenue, for Tuthill King, three stories high, French style, at a cost of \$10,000. A dwelling, of pressedbrick, 25x50 feet, on Wabash avenue, for Mrs. M. McCalla, three stories high, French style, at a cost of \$7,000. A dwelling of pressedbrick, 25x60 feet, three stories high, French style, on Michigan avenue, for W. W. Kimball, at a cost of \$8,000. A dwelling of pressedbrick, 25x60 feet, three stories high, French style, on Michigan avenue, for H. B. Cone, at a cost of \$9,000. A block of three dwellings of pressed brick, 67x45 feet, three stories high, English style, on Twenty-first street, for A. Bigelow, at a cost of \$13,000. A block of five dwellings, artificial stone, 109x40 feet, French style, four stories high, corner of North State and Ontario streets, for J. V. Farwell, at a cost of \$37,000. A block of stores and boarding houses, frame, 60x100 feet, two stories, plain style, corner of Rush and Illinois streets, for W. S. Johnson, at a cost of \$12,000. Alterations of frame two stories, French style, on Wabash avenue, for F. C. Sherman, at a cost of \$4,000. Addition to the Sherman house, marble front, 40x100 feet, five stories high, Italian style, on Randolph street, for F. C. Sherman, at a cost of \$50,000. Rush Medical college, of pressedbrick, four stories high, 53x65 feet, Italian style, corner of North Dearborn and Indiana streets, for the medical corporation, at a cost of \$50,000. Rush Medical college is finished and fitted up with all modern improvements, on a very liberal scale. Two lecturerooms are seated suitable for six hundred students each, all having a full view of the professors' rostrum. The building is heated by steam, and thoroughly ventilated and lighted. Two dwellings, marble front, three stories high, 60x72 feet, French style, on the corner of West Adams and Morgan streets, for Messrs. Bishop & Dean, at a cost of \$30,000. A dwelling of brick, two stories high, 24x60 feet, Italian style, on Michigan avenue, for J. C. Collins, at a cost of \$8,000. A dwelling, frame, two stories high, 30x50 feet, French style, on Michigan avenue, for A. Granis, at a cost of \$10,000. A block of four dwellings, of marble, three stories high, 75x42 feet, Italian style, on Michigan avenue, for C. T. Wheeler, at a cost of \$40,000. Lead and paint works, of brick, three stories high, 60x80 feet, plain style, corner of Dearborn and Fifteenth streets, for D. B. Shipman, at a cost of \$20,000. Rebuilding Wabash avenue skating rink, 96x175, with brick walls and a curved roof, in depot form, making a very fine looking building; cost about \$7,000. Union depot of Michigan Southern & Northern Indiana, and Chicago, Rock Island & Pacific Railroad Companies, located on Van Buren street, between Sherman and Griswold streets. It is six hundred feet long and two hundred feet wide, three stories high in front, built of stone, Italian style of architecture, containing full suites of offices for both the railroad companies, both for passengers and general freight, with a large supply of fireproof vaults for the safe keeping of valuable papers, etc. The passenger or car shed is very large and

light, with apartments for the convenience of passengers very complete, and is acknowledged to be the finest structure of the kind in this country. This building was commenced in 1866 and completed in 1867, at a cost of \$260,000. Centenary Methodist Episcopal church, situated on West Monroe street, near Morgan, was commenced in 1866, and is now nearly completed. It is a stone structure, in the early English Gothic architecture; quite an imposing structure for a building without a tower. The main audienceroom is one of the largest in the city, and will be completed, ready to dedicate, early in January next. It is very richly finished, in light and dark walnut, oiled and waxed. The ceiling is elaborately frescoed in Gothic tracery. Total cost, \$60,000. Fifth Baptist church, the foundations of which have been put in, located on the corner of Morgan and West Harrison streets, is to be built in the Romanesque style, pressedbrick and cut-stone trimmings, with a tower and spire, and will cost about \$50,000. Chicago Water Works buildings, consisting of the main water power-engine and boilerhouses, with workshops, which will cost in the aggregate \$200,000. The water tower, which stands in a detached position in front of the enginehouse, is worthy of more than a passing notice, as it was built in a bed of quicksand, and fears have been entertained by many that trouble might ensue. The foundation has been prepared by driving about one hundred and seventy-five hardwood piles firmly into the quicksand, thoroughly capping them and filling the interstices with concrete, forming a base twenty-seven feet square, upon which the superstructure has been erected to the height of one hundred and seventy-five feet, with heavy stone and brick walls, aggregating thirty thousand cubic feet of masonry, and supporting the main water column, thirty-six feet in diameter, with a flight of iron stairs entirely around the standing water column. The total weight resting upon the foundation is two thousand and fifty tons. The total weight, including the water in the column, has now been on this foundation about two months. The structure stands as firm as if on a rock foundation. The enginehouse is a superior building, which, together with the tower, is built of stone-faced work, in the castellated Gothic style, very effectively carried out. It is a fireproof structure, and excels any water works structure on the continent.

“O. L. Wheelock, architect, 77 Dearborn street, designed the following buildings: One frame residence, for B. F. Chase, on the corner of Sixteenth street and Prairie avenue, two stories, French roof, and brick basement, finished up with balconies, porches and piazzas complete; size, 23x51; cost, \$10,000. One brick residence, two stories and basement, for Dr. Carpenter, situated on Michigan avenue near Fourteenth street; size, 25x38; cost, \$12,000. Two marble-front residences, on Michigan avenue near Sixteenth street, for Messrs. Reed & Bushnell; three stories and basement, finished in a first-class manner, with piazzas, cut-stone balconies, steps, etc., the interior finished with all modern improvements; size of each, 26x75; cost, \$50,000. J. M. Wait's residence on Cottage Grove avenue, two stories and cellar, finished with bay windows, piazzas, observatories, etc.; size, 30x46; cost, \$6,000. One frame residence for W. A. Jenkins, on Wabash avenue, south of Fourteenth street, two stories and basement, finished in first-class manner; size, 22x57; cost, \$6,000. Two frame dwellings for Messrs. Morley & Barstow, on Calumet avenue, near Twenty-third street, two stories and

brick basement; cost, \$7,000. One frame cottage for J. R. Adams, on Wabash avenue near Fourteenth street; size, 20x56; cost, \$3,500. One first-class frame residence for Mrs. M. Updyke, on Wabash avenue near Eighteenth street, two stories, mansard roof and brick basement; size, 25x63; cost, \$15,000. One frame dwelling for C. W. Day, near the corner of Twentieth street on Prairie avenue, two stories and stone cellar; size, 23x54; cost, \$6,000. Two brick dwellings for Dr. D. R. Dyche, on the corner of Warner and Hoyne streets, two stories and basement; size, 24x42; cost, \$10,000. Dr. A. W. Freeman's residence, on the corner of Wabash avenue and Fourteenth street, three stories of brick and ashlar front and side to basement, finished with cut-stone steps, trimmings, etc., in first-class manner; size, 25x68; cost, \$15,000. Three ashlar front residences for Charles Bradley, on Wabash avenue near Fourteenth street, three stories and basement, finished in a first-class manner; size of each, 25x70; total cost, \$40,000. One frame residence on Indiana avenue near Twenty-fourth street, for Mrs. Sarah I. Ansgore, two stories and brick basement; size, 24x62; cost, \$6,000. One brick store for L. Mead, on Wabash avenue near Washington street, four stories and basement; size, 25x77; cost, \$10,000. One frame residence for J. S. Corning, on Michigan avenue near Twenty-second street, two stories and brick basement; size, 34x44; cost, \$8,000. Four frame houses and a store for W. N. Woodruff, on the corner of Twenty-third street and Cottage Grove avenue; cost, \$20,000. Brick store, No. 84 Washington street, for E. Maniere, Esq., three stories, mansard roof, and basement finished with cut-stone, trimmings, etc., finished in best manner; size, 21x90; cost, \$15,000. One frame house for C. M. Updike, on Wabash avenue near Eighteenth street, two stories; size, 20x50; cost, \$5,000. Two frame houses for Mrs. M. Campbell, on Cottage Grove avenue, No. 84, two stories; size, 21x50; cost, \$6,000. One frame house for B. Calaghan, on Indiana avenue near Thirty-first street, two stories; size, 22x24; cost, \$3,500. One brick residence for Rev. W. H. Ryder, on Wabash avenue near Van Buren street, three stories of brick with cut-stone trimmings and ashlar front basement, finished with modern improvements in first-class manner; size, 43x43; cost, \$15,000. One brick hotel for Henry Thill, on River street near Rush street bridge, four stories and a basement; size, 59x66; cost, \$10,000. One frame house for S. A. Irish near the corner of Calumet on Twenty-fourth street, two stories and brick basement; size, 22x36; cost, \$4,000. Three brick stores for J. L. Graham, on Randolph street near Franklin, four stories and basement; size of each, 21x56; cost, \$30,000. One brick residence for J. Crighton, on the southeast corner of Throop and West Monroe, two stories; mansard roof and basement finished best manner with cut-stone steps, trimmings, etc., with ashlar front and side to basement; size, 25x71; cost, \$15,000. One brick house for W. H. Bryan, on Calumet avenue, two stories and basement; cost, \$6,000; size, 23x42. Two brick houses for George Chambers, two stories; size, 20x40; cost, \$6,000. One brick residence for S. S. Hayes, on the corner of Carroll and Sheldon, two stories; mansard roof and basement, finished in very best manner with cut-stone trimmings, octagon side, cut-stone steps, ashlar front and side to basement, etc.; size, 43x73; cost, \$40,000. One brick house for Mrs. N. R. White, on Indiana avenue near Twenty-fourth street, two stories and basement; size, 25x52; cost, \$6,000.

Two first-class brick residences for J. H. Small, on Wabash avenue near Twentieth street, two stories; mansard roof and ashlar front basement, finished in best manner with cut-stone trimmings; size, 24x67; cost, \$30,000. Five brick dwellings for H. A. Hurlbut, on the corner of Chicago avenue and North State street, three stories and basement, with cut-stone trimmings; size, 23x40; cost, \$40,000. One frame residence for Mrs. L. A. Herrick, on the corner of Indiana avenue and Eighteenth street, finished in very best manner with balcony, piazzas, bay windows, conservatories and mansard roof, with all the modern improvements; two stories and brick basement; size, 40x75; cost, \$25,000. One first-class house for George W. Gage, to be built on the corner of Twenty-second street and Prairie avenue, to be two stories, brick, with cut-stone trimmings, basement with ashlar front and side, and mansard roof; size, 45x83; cost, \$60,000. One brick riding gallery for C. M. Clark, to be built on the corner of Prairie avenue and Eighteenth street; size, 200x300; cost, \$40,000.

“Cochrane & Garnsey, architects, designed the following: Block of four marble front residences, four stories and mansard roof; erected on Wabash avenue near Sixteenth street; first-class in every particular; Messrs. Wallace, Kahl & Ayer, proprietors; cost, \$80,000. Block of three marble front residences, two stories and basement, now under course of erection for A. A. C. Rogers, Esq., corner of Twenty-third street and Wabash avenue; cost, \$30,000, with all modern improvements. Block of three frame and brick residences, erected on Twenty-sixth street, between Michigan and Wabash avenues, for Messrs. Hall & Frost, English basement; three stories; cost, \$15,000; finish first-class. Block of two residences built on corner of Prairie avenue and Twentieth street; two stories and basement; marble fronts on Prairie avenue and pressedbrick on Twentieth street; finished with all modern improvements; Messrs. G. F. Bissel and W. E. Richardson, proprietors; cost, \$40,000. Block of stores on Twenty-second street, between Michigan and Indiana avenues, for S. B. Howes, Esq.; cost, \$12,000. Block of stores on East Madison street, brick, cost, \$10,000, for Thomas Nelson, Esq. First-class residence, marble front, stone steps, etc., hip-roof, erected on Prairie avenue near Sixteenth street for Horace G. Chase, Esq., costing \$18,000. The above residences are heated and ventilated by H. Ruttan’s system of ventilation. First-class residence erected on Calumet avenue near Twenty-second street; Milwaukee pressedbrick front, stone dressings, stone basement, ventilated by Ruttan’s system; I. N. Harden, Esq., proprietor; cost, \$10,000. First-class residence built on Indiana avenue near Eighteenth street, pressedbrick basement, two stories and basement, hip-roof all modern improvements, ventilated as above; cost, \$8,000; Samuel Powell, Esq., proprietor. Block of first-class houses, marble fronts, four stories, French style, erected for Messrs. Cochrane & Sherwood; cost, \$10,000 each. First-class residence, pressedbrick, stone dressings, erected for Andrew Elmers, Esq., on corner of Wabash avenue and Twenty-sixth street, at a cost of \$10,000. First-class residence, erected on corner of Ellis avenue and Douglas place, brick basement, frame superstructure; Fred. Smith, Esq., proprietor; cost, \$8,000. First-class residence for George E. Girts, Esq., erected on Wabash avenue near Eighteenth street; pressedbrick front, stone dressings; cost, \$10,000. First-class residence erected on corner of Twenty-third street

and Prairie avenue, frame, with brick basement, for W. D. Curtis, Esq.; cost, \$10,000. First-class residence erected on Michigan avenue near Twenty-sixth street, marble-front basement, frame superstructure; William J. Tewksbury, proprietor; cost, \$8,000. First-class residence erected on corner of Wabash avenue and Thirtieth street, for Thomas W. Holmes, Esq.; brick basement, frame superstructure; cost, \$9,000. Two frame residences on Michigan avenue near Twenty-fourth street, erected for J. B. Nye & Co.; cost, \$6,000 each. Frame residence with brick basement, three stories, gable roof, finished first class, erected at Cleaverville; cost, \$6,000; A. R. Mueller, proprietor. Frame residence erected at Cleaverville, three stories, with brick basement and all modern improvements, for G. H. Miller, Esq.; cost, \$6,000. Residence for William K. Ackerman, Esq., Kenwood, brick basement, frame superstructure, French style, finished first class; cost, \$10,000. Residence for D. Henry Sheldon, Esq., Kenwood; cottage; cost, \$3,000. Residence for George W. Little, Esq., Kenwood; cottage style; cost, \$3,000. Church for Lutheran society, erected on corner of North Dearborn and Ontario streets; cost, \$6,000; frame structure. Residence for F. Munson, Esq., Cleaverville; frame cottage style; cost, \$4,000. First-class residence for Charles H. Wheeler, Esq., to be erected on Prairie avenue between Twenty-first and Twenty-second streets; cost, \$6,000. Frame residence on Michigan avenue near Thirtieth street, for J. M. Wilson, cost, \$6,000. Total cost, \$360,000.

"A. Bauer, architect, No. 47 La Salle street, designed the following: Commercial building, banking and office house exclusively, situated on the southwest corner of Lake and La Salle streets, built in the Italian style of the Palladian school; dimensions, eighty feet front on La Salle street, by forty on Lake street; four stories high, exclusive of basement story; the upper stories are made accessible by spacious and elegant halls and convenient stairways, well lighted by a large skylight; the building is owned by Charles F. Grey, Esq; cost \$50,000; faced with Athens marble, and will be ready for occupancy by January 1, 1868. Insurance building, office structure, situated on Washington street, between Wells and La Salle streets. It is built in the rich Italian style of the Venetian school, owned by the Commercial Insurance Company, and is to be used for offices only. The front is built of white Athens marble, embellished with firemen's emblems and other appropriate ornaments, and the whole surmounted by a stone cornice. It has a frontage of forty feet six inches, is four stories high exclusive of basement story. The entire building is heated by a most approved system of low-pressure steam. It has fireproof vaults in the basement, first and second stories, has light and spacious halls and elegant stairways, which make the upper stories very accessible. The inside will be finished with various kinds of hardwood, among which black walnut and ash will be the most prominent. The entire structure will cost about \$52,000. Dore school, a substantial brick structure for the city, situated on Harrison street near Desplaines street; dimensions, 87x69 feet front, four stories high, and contains fourteen classrooms, each 27x33 feet, also an exhibition hall 39x66; cost, about \$40,000. Block of two stores for John Haerting, corner of Chicago avenue and Wesson street. Front on Chicago avenue is faced with Athen's marble; Wesson street front faced with pressedbrick and stone

dressings; dimensions, fifty-three feet on Chicago avenue by seventy-five feet on Wesson street; three stories high, exclusive of basement story; cost, about \$27,000. Dwelling for Samuel Johnston on Pine street near Huron, two stories high, exclusive of basement story; material, brick, with a mastie finish outside, in imitation of New York sandstone; cost \$15,000. Block of two frame dwellings on Wendell street near Wells, for Mrs. Lanpertz; cost, \$9,000. Addition to the St. Bridget's church at Bridgeport; cost, \$10,000. Frame church for the First Scotch Presbyterian congregation, corner of Adams and Sangamon streets; cost, when completed, about \$12,000. Two brick dwellings with Athens marble fronts on Wabash avenue near Sixteenth street, for J. C. Dore, Esq.; cost, \$18,000. Two brick stores on Clark street, between Madison and Monroe streets, for B. F. Lawrence; cost, \$20,000. A store on Monroe street near Clark, for B. F. Lawrence, five stories high, exclusive of basements and faced with patent concrete brick; cost, \$8,000. A two-story brick dwelling on Division street near Larrabee, for A. Hann; cost, \$8,000. A Gothic dwelling at Hyde Park, for N. Perkins, Esq.; cost, \$12,000. Frame dwelling for Dr. H. W. Jones, two stories high, with mansard roof, situated on Ada street near Madison; cost, \$10,000. Parsonage for Rev. Thomas Bourke, on West Indiana street near Paulina; material, brick; cost, \$8,000. Block of two brick dwellings, two stories high, exclusive of basement, on Indiana avenue near Twenty-fourth street for R. Migele; cost, about \$14,000. Store on North Clark street near Chicago avenue for Messrs. Hausen & Waldhausen; brick, with Athens marble front; cost, \$10,000. Block of three dwellings, with Athens marble fronts on Fulton street, between Sheldon and Peck, for Messrs. Dunphy & Barton, Hugh Watt and William Dee; cost, about \$18,000. Four dwellings, with Athens marble fronts, on Peck street near Carroll, for S. S. Hayes, Esq.; cost, about \$15,000. Block of three frame dwellings for J. U. Borden, Esq., on Lincoln street near Madison, cost, about \$8,000.

"Burling & Bauman designed the following: Armour's building, at the corner of Michigan avenue and Randolph street, is, without dispute, the most elegant and substantial of our fine business blocks, and comprises two stores, each forty-five feet front on Michigan avenue, running back to Central avenue, and having a depth of one hundred and thirty feet on Randolph street, each store having six floors, including an uncommonly high basement. The fronts on Michigan avenue and Randolph street are of the purest white Athens stone and are four stories in height, with a mansard roof, very neatly covered with slate, and having windows of excellent design and proportion. The corners and the center of the building on Randolph street are carried up with stone several feet higher than the roof, and are well finished with handsome cornices, parapets and stone chimney tops, presenting a pleasant outline and conveying an idea of permanence. Each store is finished in the best manner and style for wholesale purposes, and fitted with a steam hoisting apparatus, which connects with all the stories, and is operated by an engine located below the sidewalk of Randolph street. Each store is heated with steam, supplied from the same boiler which supplies the engine for hoisting apparatus; total cost of building, \$140,000. A marble front building, erected at the corner of Dearborn park and Randolph street, for H. W. Hinsdale, Esq.; size 48x81;

five stories and well lighted basement, for first-class wholesale purposes; total cost, \$52,000. Three marble-front wholesale stores, erected on Michigan avenue near the old Marine hospital, for Messrs. Barker & Haskell; size, 79x124; four stories and basement; total cost, \$42,000. One marble front store, adjoining store of Messrs. Barker & Haskell, for E. F. M. Hale, Esq.; size, 30x124; total cost, \$15,000. Four brick dwelling houses erected on Calumet avenue near Twenty-sixth street, for Thomas Holihan, Esq.; size, 96x42; total cost, \$28,000. Two first-class brick dwelling houses for N. Mears, Esq., erected at the corner of Ohio and Cass streets; cost, \$25,000, including brick barns. A marble front store erected on Van Buren street near Sherman, for George Rapp, Esq.; size, 25x70; cost, \$10,000. A hotel brick building, three stories and basement, erected on Sherman street, opposite the Michigan Southern depot, for Thomas Allen, Esq.; size, 50x100; total cost, \$16,000. A first-class residence for George Schneider, Esq., a brick building, two stories, attic and basement, erected at the corner of Michigan avenue and Twentieth street; size, 42x64; total cost, \$20,000. Three dwelling houses, frame buildings, two stories and attic, erected at the corner of North La Salle street and North avenue for E. B. McCagg, Esq.; cost, \$10,000. Four dwelling houses, brick buildings, three stories and basement, erected at the corner of Oak and La Salle streets, for John McEwen, Esq.; size, 96x42; total cost, \$28,000. A grain elevator for Messrs. Armour, Dole & Co., 84x330, and one hundred and thirty feet high; capacity 1,250,000 bushels. The whole design for construction and machinery has been furnished by Messrs. E. Burling & Co. The cost of this structure will be \$400,000. A frame dwelling house, Gothic style, erected at the corner of Elm and North La Salle streets, for E. W. Blatchford, Esq.; cost, \$6,000. The main portion of Grace church, corner of Chicago avenue and North La Salle street; built in the English Gothic style; walls and roof are now completed; the cost of the church will be about \$60,000. The interior portion of the Historical Society building, on Ontario street near Dearborn; the whole building costs \$36,000; expended this year about \$12,000. A brick dwelling house, stone front, three stories and basement, erected on North La Salle street, near Oak, for Herman Toepfer, Esq.; cost, \$12,000.

“T. V. Wadskier, architect, designed the following: Two first-class dwellings on Prairie avenue south of Sixteenth street. Pressedbrick fronts with stone trimmings; three stories and basement, for John G. Shortall, Esq.; cost, \$25,000. Block of four marble-front stores, on the corner of State and Eighteenth street, for John N. Staples, Esq., and B. Dilworth; cost, \$35,000. Frame dwelling house on Michigan avenue south of Twenty-second street, for John Wright, Esq., finished throughout in a first-class manner; cost, \$12,000. Block of ten marble-front residences, on the corner of Washington and Sheldon streets, for Clark Lipe, Esq., and Joseph Harris; three stories, basement and French roof. No expense has been spared in furnishing these houses with all modern conveniences and furnishing them throughout in a first-class manner, and, architecturally considered, it is one of the finest blocks in the city; cost of the entire block will be \$160,000. Each residence is supplied with a commodious and convenient barn, corresponding to the dwelling, at a cost of \$30,000. Marble-front residence, two stories, basement and French roof, for the late Thomas R. Hood, Esq.,

on Wabash avenue near Fourteenth street; cost, \$15,000. Marble-front residence, three stories and basement, on Michigan avenue near Eighteenth street, for Charles Church, Esq.; cost, \$15,000. Marble-front residence, three stories and basement, on Michigan avenue south of Sixteenth street, for A. Booth, Esq.; cost, \$20,000. Block of four frame dwellings on the corner of Twenty-third street and Indiana avenue, for S. B. Howes, Esq.; cost, \$14,000. Two-story-and-basement brick residence, with stone trimmings, on Calumet avenue south of Twenty-second street, for P. Hutchinson, Esq.; cost, \$12,000. Lard oil factory on the corner of Nineteenth and Blackwell streets, for Messrs. Fairbanks, Peck & Co., built of brick; cost, \$25,000. First-class brick residence on the corner of Michigan avenue and Thirty-third street, for E. C. Cleaver, Esq.; cost, \$15,000; brick barn to the above cost \$3,000. Office block on the corner of Madison and La Salle streets, for Dr. S. L. Major; marble front, four stories and basement, finished throughout in a first-class manner with all modern conveniences; cost, \$55,000. New hall for Blaney lodge, on Dearborn street, in George R. Chittenden's building; cost, \$20,000. Fitting up Kilwinning lodge, North Dearborn street; cost, \$6,000. Residence for F. Fischer, Esq., on the corner of Hoyne and Washington streets, cost, \$12,000. Unity church, on the corner of Dearborn and Whitney streets; the corner-stone was laid this year and the building is now up to the height of main floor; cost, \$125,000. Frame dwelling for F. Pearson, Esq., on Vincennes road; cost, \$5,000. Remodeling and fitting up stores for Edward Ely, Esq., Nos. 3 and 4 Washington street; cost, \$10,000. Brick dwelling for Mr. Miller on Aberdeen street; cost, \$9,000. Block of three dwelling houses for W. R. Burdick, Esq., on Michigan avenue near Sixteenth street; cost, \$20,000.

"J. M. Van Osdel, architect, did a large business. The following are a few of the principal buildings completed and in process of completion by Mr. Van Osdel, embracing only those that exceed \$15,000 in cost: Dwelling house for Dr. I. Bassett, corner of Morgan and Adams; cost, \$20,000. Dwelling for W. T. Allen, corner of Wabash avenue and Harrison street; cost, \$32,000. Dwelling for Fernando Jones, Prairie avenue near Eighteenth street; cost, \$20,000. Two dwellings for A. Ballard, Wabash avenue near Jackson street; cost, \$25,000. Two dwellings for William H. Carter, corner of Sangamon and Van Buren streets; cost, \$15,000. New buildings for Potter Palmer, on northeast and southwest corners of State and Washington streets, will cost, when completed, \$400,000."

The *Tribune*, *Times*, *Journal*, *Inter Ocean*, *News*, *Herald*, *Mail*, *Post* and other daily papers, as well as the architectural and trade journals, all have recognized the progress of the building arts, and each one has made a record of such progress. To them the history of the city's buildings in these volumes is largely indebted, for without such contemporary records it would be the work of years to collect the data given in connection with the houses here described. The Chicago newspaper and trade journal are the kodaks of the city; little escapes notice in their pages, and thus they form the true basis for Chicago's history.

Outside the field of journalism, architecture and the building arts boast of an excellent literature. In the history of associations, references are repeatedly made to the productions of writers on special topics, and in some instances their papers are quoted entire. The plan

will be followed in the second volume, where writers within the circles of painters, decorators, plumbers, iron workers and lumbermen will be quoted, so far as their papers are necessary to substantiate or refute historical statements.

In February, 1888, the late John W. Root read a paper before the Architectural Sketch club on "Broad art criticism." It was in the same style as those delivered years before by W. L. B. Jenney at the Chicago university; but of course, touched on some topics which did not occur to the mind of the older architect in former years as there was little in the activity of architecture here in 1880-81 to suggest the ideas which obtained in later years. The principal points of his address are reduced as follows:

Although art is more prolific than ever before, and interest in art so general, yet the undoubted decadence from great epochs must be lamented. The cause is not hidden. Whenever a people is inspired and dominated by a few great ideas their art becomes great. Works of the Renaissance are greatest of all modern creations, because all the varied and vital forces flowed most strongly through a few great channels. The artist is but a lens which receives and focalizes influences about him. In our own time the universality of our civilization produces an atmosphere hitherto most hostile to the production of great works of art.

The one quality in all art which the genius of this age insists upon is accuracy. The attribute chiefly insisted on is technique. The architect searches all ancient and modern times that his design may be undeniably in the style of this or that period. France, the long-time art leader of the world, has become the chief home of magnificent technique. Here what the man does is of much less consequence than how he does it. His creations may lack aim; they must not lack method. In every art true sentiment and inspiration have fled, and in their place we have thousands of works, cheap in idea, clever in execution. Architecture devotes itself to sensation making. Renaissance follows Renaissance so fast that the new birth never gets past its teething age, and dies before we know the color of its eyes or what its form and complexion would have been. In England and America this race after new sensations has been peculiarly mad. Within the memory of the youngest of us architectival creations have twice over embodied the whole history of architectural development from Hiram to Norman Shaw. The dinner has been one long succession of dishes, most fascinating to the eye and to the palate, but each so unsubstantial and so quickly removed that the appetite is both jaded and unsatisfied. In America, a new dish has been prepared for the palate thus exhausted. It may be called "roti a l'Hottentot." Its ingredients are chosen from among those things that all previous architectural cooks have considered inedible; and sauce it has none. In preparing the house according to this new recipe of our Cordon Bleus you begin by making believe that you live in an age before the discovery of stone-cutters' tools; you then roll into a melange, cook very rare, and serve cold.

Although we have, as yet, no distinctive American art, there is a promising future for art in America. The national mind is peculiarly open; it is freer from prepossessions than any other; it is fair and level, not set in certain grooves and fixed with unchangeable tendencies. To these are added quickness of receptivity almost unparalleled; readiness to receive

impressions and acute sensitiveness to environment; humor broad and fanciful, veiling at times beneath its play the depth and seriousness of mind which is also typically American. The combination seems to promise that we will have much of the elemental stability and seriousness of mind of the mother country, modified by the lightness of fancy and imaginative vivacity of the French. In architecture, dominance of one leading quality over others, "style" lies back of every one of the great historic types, and it is at once their cause and justification. The style thus imparted must not be understood to be in painting, sculpture or architecture, a thing of exterior form alone. It is the life and existence of the work. So far as material conditions permit it to be possible, a building designated for a particular purpose should express that purpose in every part. The purpose may not be revealed by conventional means, but it must be so plainly revealed that it can be escaped by no appreciative student. Ascertain first what are the conditions essential to the function which the house is to perform, and the force with which that function is expressed measures its value as a work of art.

The architect may choose different methods for this expression, suiting his method to the general result he has in mind, but the result must be both homogeneous and typical. It thus becomes necessary in estimating the merit of a house or a picture to know not only its general intention, but also the point of view of the artist and the methods by which he has sought to express the general intention. Much of the stability, hospitality, comfort and refinement of the household may be expressed by a design of the most obvious character, whose sole reason for recognition as thus expressed lies in its common association with comfortable households. But the great art work is that which expresses the same intention by less obvious but more inherently significant means—means vital in themselves—the sweep of roof lines, the general repose of mass, the delicacy and grace of ornament, the generosity and openness of aspect. What has just been said indicates another essential characteristic of all true art work—moderation. All strength, associated with long endurance, has this quality. The force which exerts itself intemperately is always shortlived. So the art work which by excessive display or by wasteful use of means captivates the first glance, has within itself the seeds of its own destruction.

Given a problem to be solved, many methods may possibly serve, only one can be best. When that one is chosen and resolutely followed, the work so produced communicates pleasure of the highest kind. The self-denial of the artist, the self-mastery, the strength, the concentration breathe in the work and give to it vitality and beauty of the highest order. Works so produced are always simple as they are courageous and fervid. The creative force operating with this self-imposed moderation tends to expression by simple means, for the thought repressed till fully ripe for utterance becomes a jewel too valuable for prodigality, and a mind thus withholding itself from light utterance speaks with boldness begotten of conviction and with fervor kindled by fullness of thought. No tropical luxuriations of fancy can for a moment be worth the art work which has been created in this intense workshop of the brain, where high ideals have been applied with singleness of purpose; where self-denying scrutiny has per-

mitted the use of none but the fittest thoughts; where with simplicity and courage and fervor all has been welded into one consistent and inspired whole.

About an art work so created, critics may at first disagree. But they and all men finally bow in reverence before it, and it becomes to all men a refuge from care and sordidness, a source of moral and intellectual delight and elevation. This condition of mind in the artist can be engendered only by full absorption by him of all those influences which lie most closely about him, with which he is most familiar because of daily association. Remote and unfamiliar aspects of nature, or types of men, or conditions of life can not be felt with earnestness sufficiently deep fully to permeate the art work produced under their influence. In all the history of the world it has been true, and it must always remain true, that the art work of one nation which has gained its inspiration solely from another has been worthless. So true is this that you will note in even the historical paintings of every great master previous to the nineteenth century the reproduction of human types with which he was familiar, and an absolute indifference to the historical accuracy of the types represented. An exactly parallel condition existed in every form of art work—painting, sculpture, decoration and architecture; the artist was far more concerned in representing essential ideas in his problem than in spending time and labor upon what he conceived to be non-essentials. At present this state of things does not exist. Perhaps it can never again exist even if it should be found in every sense desirable. This, however, is axiomatic that any art of any time in becoming great becomes national; and that layman, contemporaneous with this great art, love best the ideas which are familiarized to them by long custom. Our present attitude is false in this respect, as much as any other, that we do not value rightly that which normally should be of most personal significance to us. The skies we see each day, the grass we tread upon, the trees beneath whose shade we rest, the men we meet and understand, the histories which thrill our hearts with national pride—these are subjects which may profoundly speak to us from the canvas. So with our own peculiar climates and manner of living—the scorching heat of summer, the winter's bitter cold—our freedom and hospitality—these are *motifs* which, when recognized in our architecture, should give us keen delight.

I do not wish to advise the patronage of American art because it is American; but I do say, that if we really love art, we can get more pleasure from art work which deals with conditions we know and rightly value, than from such even if somewhat better in itself—as if by virtue of its *locale* comparatively strange to us. Ours should be the task to help every artist who will summon before our delighted eyes in significant beauty all those conditions of nature, in landscape, in men, in the household, in society, whose beauty we know truly belongs to us. When this comes about, art schools, artists and sympathetic patrons—American art, in short, will be here.

A paper, written by O. J. Pierce, an architect of this city, entitled, "The modern use of established architectural styles," was published in the *Sanitary News* in January, 1888. It presents sound reasoning, couched in literary form.

"The question as to how far the modern architect should follow established architectural

styles in his practice, and to what extent he is justified in modifying, or even ignoring, their use, one and all, is, as yet, a vexed one, one that promises for years to come to divide the architectural profession as well as the increasing ranks of laymen who take a lively interest in all that pertains to architecture. For even casual observers, if possessed of average perceptive faculties, soon become familiar with some of the characteristics that differentiate a few of the so-called architectural styles. It may be worth noting as a passing observation, that in architecture, as in almost everything else, a person's zeal for some particular thing and his intolerance for all that differs from it, form a pretty accurate gauge of his ignorance of the matter, and that enlarged understanding of a subject in all its bearings is quite likely to result in broader views and greater catholicity of sympathy or, at least, of toleration. Standing opposed to this broadening process of culture, is the tendency to magnify any subject, or any branch or phase of a subject, which may receive our specific attention for any considerable length of time. Hence, the bitter antagonism between the rival medical and theological schools as exponents of well-formulated theories of medicine and religion, and hence, also, the dictum of the modern French academic school of architecture. Notwithstanding the fact that the various nations of ancient, mediæval and modern times, have had more or less distinctly marked styles of architecture, the outgrowth of their varying requirements, taste and skill, constructive and artistic, the masses of native-born Americans appear to be mentally clear upon only two or three distinct styles of architecture, namely: the Classic, the Gothic, and, during the last decade or so of years, the Romanesque.

"The difference in these styles is so strongly marked that it is impossible to confound one with the other, and, having acquired a certain familiarity with the grammar of them, the practice seems to prevail generally, of attempting to classify every new building, and, if not unmistakably falling under one of these styles, to condemn it altogether, or to feel dubious as to whether it should be admired until some oracle gives the cue. It seems, then, that the modern architect, who, having the courage of his conviction that a piece of architecture may be good and yet belong to neither of these recognized styles, that it may even mingle some of the leading characteristics of two or more of them (so that it is done upon true logical grounds, structural or artistic), and who puts his belief into practice, must look to the thoroughly and broadly educated, or to that small class of independently-minded persons who venture to admire a thing without stopping to know what some one else thinks about it. All this is somewhat discouraging to an architect of honest independence. Perhaps it is not more so in the matter under consideration than in all others, for he who ventures to disregard the recognized conventionalities of life and the society in which he mingles, in any domain of belief or action, must expect to be a mark for stinging arrows of wit, if not for poisoned shafts of envy, and sometimes for the brutal onslaught of malice and cruelty. Adherence to recognized authority is usually made easy enough for all, but what of him who can not find his ideal of truth in any one of the easily spoken creeds?"

Creeds grow so thick about the way
Their boughs hide God. I can not pray.

“The conscientious modern architect who looks to recognized styles for precedents in his practice might be similarly embarrassed by the conflicting authorities and the mandates of ever changing and capricious fashion, which pronounces that good to-day which was a by-word of reproach a few years ago, and which will become so again in a few years more. Now I do not wish to be understood as condemning the intelligent modern use of established styles of architecture. Far from it. It is not the use, but the abuse that I deplore. Commencing my professional life nearly twenty years ago, with an absorbing zeal for one style only, and a pronounced prejudice against all others, I have gradually grown into an appreciative sympathy with the beauties that characterize nearly all styles, and would not hear any one of them unjustly criticized without resentment. Yet, I insist that some styles are better adapted to one character of building than others, and although the man of skill and genius will, unquestionably, exhibit those traits in adapting any style of architecture to some difficult and discordant requirement, and thus challenge my admiration; still, I feel that I ought to admire the logical working out of the problem in a straightforward, honest manner, neither losing sight of the structural nor the artistic requirements, and with no embarrassing traditions cropping out to enervate the judgment of the trained artistic instinct. Such a creation may—perhaps must—be in the feeling which pervades one of the great styles, but there will be no complaisant adoption of the grammar of some style for the purpose of hiding the artistic poverty of the designer.

“I have alluded in the foregoing remarks to only three of the recognized styles, but whether we refer to three only, or whether we subdivide and extend the classification, the principle is the same, and the question remains: Shall we be permitted to go outside of them or to mingle the characteristics of different styles in one composition? The Purist says, very emphatically: “No!” and stigmatizes all such liberty as artistic licentiousness; but possibly the Purist may be controlled by zeal rather than by an intelligent discretion. When was it made an artistic sin to change the styles that were inherited from the preceding generation? Was it when the Greeks borrowed the column and lintel from the Egyptians, that they might adapt them to their own uses, and then changed the grammar of them? Was it when Constantine, having been converted from paganism to Christianity, used the Roman columns and adopted the Roman arch, but disregarded the recognized methods of use, and thus laid the foundations of the style that is now almost regarded, by some, as an American style? Was it when the early Christians in England and throughout continental Europe discarded the styles of the hated pagans, and from rude and inartistic beginnings, inaugurated innovations in construction that in their natural evolution grew into the glorious Gothic—originally a name of contempt and reproach—the pride of civilized mankind? If not at one of these times, then when, I ask, did it become an artistic crime to introduce innovations, to mingle the elements of other styles? And where, I ask, would now be the world’s diversified architecture, if the Purists of past centuries had been powerful enough to hold back the advancing tide of innovation and progress?

“But in protesting against arbitrary pronouncements as I do, let me not be understood as

being an iconoclast, anxious to destroy traditions and root out laws. I would destroy the faith in arbitrary and unreasoning traditions and laws only; simply loosen the mental chains and strike off the artistic shackles that enslave so many strong, as well as weak, men. That the weak should hug the chains of their enslavement is natural, and, perhaps, not to be entirely deplored from an artistic standpoint; that the strong and vigorous should do so is deplorable, for we, as a nation, are making history to be read by future generations, and we need the best work of all our strong minds in every field of human endeavor. I believe in law. I believe in reverence for the old and authoritative, but I believe none the less in an all-embracing evolution that makes every age and nation and individual different from every other; and I do not believe that the most justly admired architectural product of the pagan Greek, four hundred and thirty-eight years B. C., is, therefore, the best expression of the architectural wants of to-day in every latitude from the equator to the frozen zones. Neither do I believe that the genius of a Michel Angelo, or of a Palladio, could devise in the sixteenth century an architectural style that is suited, in the nineteenth century, to every purpose from a cottage to a state capitol, or a courthouse in one of the back counties of our newest organized states or territories.

"I hold that the style that may be grand and glorious in the dim cathedral, is not, therefore, the best that can be employed in the erection of the Quaker meetinghouse, where pine clapboards, cedar shingles and lath and plaster are the principal materials of construction. And yet, no one goes farther in his admiration of the beauties of Classic, Gothic, Romanesque or Renaissance architecture than I. And I will extend this list almost indefinitely, until it embraces every style from that of Egypt, Assyria and Persia, down through the Greek, Roman, Byzantine, Norman, the Gothic in all its developments and transitions, and the Italian, French and English Renaissance, wherever practical without subterfuge. I do not wait until a style has become fashionable before I yield it the meed of praise and admiration, but I admire every style as the expression of a nation, a people, or a sect, working out its destiny, and unconsciously writing its history in stone. In other words, all honest architecture is admirable from a historical point of view, if from no other.

"Certain facts have become so universally accepted as to be called axioms, and some other not as yet so classed, deserve to be so called; and I submit as axiomatic, that Classic architecture was as good during the hundreds of years it was tabooed in England as it is to-day, and that Norman Shaw's revival of Classic forms has only made fashionable that which was just as good before it became the fashion, as since; that Gothic architecture is as good now as it was before it was laid upon the shelf to make room for a newer fashion; that Romanesque architecture was as good before Richardson had made it popular as it is to-day; that the once derided architecture of the American colonial period was as meritorious in 1860 as in 1875; in short, that fashion does not make a poor thing good, and that apathy and neglect do not make a good thing poor. Fashions change, but through all changes of fashion that which was good is still good, and that which was poor remains so. It was good when it was the simple and honest expression of existing needs. It is poor when diverted from its legitimate use.

Introduction

"There is such a thing as an educated taste, whereby we learn to admire that which was at first displeasing to us; and this is well, because the most subtle beauties are not those that first impress a casual observer, but rather those that only reveal themselves to the earnest seeker after truth and beauty. But while this is unquestionably true, it is equally true that there is such a thing as a taste educated or trained away from truth by the pernicious influence of depraved canons of taste. As Pope expressed it:

Vice is a monster of such frightful mien
As, to be hated, needs but to be seen;
But seen too oft, familiar with her face,
We first endure, then pity, then embrace.

And such seems to me to be the secret history of most new fashions, whether in millinery or in architecture. Therefore I say, let us be frank in our likings and fearless in their expression, not withholding words of appreciation lest some Sir Oracle should afterward declare that the style was not correct. And let us not think that a sincere liking for some particular style or expression must of necessity make us dislike whatever differs from it. It is a childish characteristic to say: "This is splendid; but that is horrid." The mature mind should weigh with more discrimination, and, by so doing, will usually find something of good in the poorest composition, and some flaw in the purest gem.

"Much of the appreciation given to works of architecture is, doubtless, the result of association. The American travels in Europe and admires, we will say, some of the classic masterpieces of Rome, or Florence, or Paris, and those buildings are ever afterward in his memory models by which he measures and criticizes American work. And so Stephen Girard must have the college buildings he gave to Philadelphia built after the model of the Parthenon, regardless of cost, economy or fitness; and so American newspaper reporters learn to distinguish the rudimentary details of two or three strongly marked styles of architecture, and make their knowledge of these styles the infallible touchstone by which to commend or condemn contemporaneous work.

"Can we not rise above this subservience to tradition, and learn to judge matters by their inherent merits, rather than by the reflected luster of the masterpieces of other ages? The highest merit of existence is not, in my judgment, to look, and think and believe with the majority of my fellow travelers, but to educate those faculties and traits and talents which I find myself possessed of, and which, if rightly educated, make me an individual; one, it may be, among the most humble of my fellow-men, but absolutely distinct from every other created being in endowments and possible capacities. To keep that individuality intact, profiting by all I see and hear, and helping others wherever I can, to make the talent I possess gain other talents, two-fold or five-fold or ten-fold, and to impress something of myself upon everything that emanates from hand and brain, is my idea of my responsibility and my high privilege. To neglect to do so, through apathy or cowardice, is unworthy.

"Ought I to discard these ideas and accept the average thoughts of the age as the oracle? Is the shout of the masses the expression of the law of God? If you answer "Yes," then I am a

protestant, a non-conformist, a heretic, if you will, and I aver that all progress in science, art and religion has ever been the result of protestation against the prevailing beliefs of the times. But I do not think my attitude upon this question of subservience to established architectural styles is materially different from the belief of the best and most progressive element of the profession. I judge thus because I observe that many of the foremost architects in America, and, to a less extent, in Europe, also, have enfranchised themselves from this thralldom.

“The English language is derived from many other languages, dead and living, and is constantly adding new words and dropping old and obsolete ones. The architecture of a people must be the history of that people recorded in material forms, and every element that is alien to the purposes of such a record may well be relegated to the domain of the archaeologist, to make room for vital elements, elements charged with the energy and throbbing in sympathy with the purposes and destiny of this people. Give us these, and the grammar of architecture will adjust itself to the diversified problems that present themselves; and, whether we record our thoughts and aspirations in the dead languages or in the living, we shall record the history of the nineteenth century, and not rewrite that of the twelfth or of the sixteenth.

“And so we will use the garnered knowledge of the centuries that have preceded us, thankful for the priceless inheritance; but we will write upon the stone records of this age, the unquestionable fact that it surpasses every preceding age in all that goes to make a people great. And future history and archaeology will unite in pronouncing the nineteenth and twentieth centuries memorable by reason of the shackles broken from every species of slavery and thralldom—physical, mental, artistic, and religious.

“Without the journal such papers and news items would sleep in some library nook and possibly be forgotten by those who listened to the reader. The newspaper and trade journal preserves them all and holds them, as it were, for future use, to be compiled in history or reproduced in the journal which first gave them to the world. The newspaper is, indeed, a vast storehouse of knowledge and an integral part of civilized life, the value of which civilization scarcely realizes even to-day.”

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Horace M. Singer

CHAPTER XIX.



NATURAL AND ARTIFICIAL STONE.

ROMAN enterprise and genius, rather than Chaldean art, was responsible for the development of stone as a building material. The Egyptians, and successively the Greeks, made marvelous advances in the lithic art, but it was not until the Romans, stimulated by Etruscan constructive methods, began to evolve the arch and many other building members, that the great age of stone was ushered into the world. Years before the introduction of Christianity, and even before the foundation of Rome, stone was appreciated as a building material; but owing to its scarcity in the inhabited districts of Asia Minor, it was only used by the sculptor, or in some special work, where enduring material was a prime necessity. When the church was firmly established, stone was selected for her first great temples, and as her influence spread out over all lands, so did building stone appreciate, until the architect specified it as the material for church building from foundation to roof. The apostles sent forth in the third, fourth, fifth and sixth centuries were imbued with a high idea of stone, and in the small gabled chapels they erected in Spain, France, Ireland, England, Africa, Sweden and the Indias, stone was the only material used. When art in building spread out from Rome, the French selected stone for their great cathedrals, and to-day the church buildings of Orleans, Chateaudun, Tours, Rheims, Bordeaux, Amiens, Evreux, Paris and a hundred other cities bear testimony to their correct ideas of this building material. W. L. B. Jenney, referring to those glories of ancient architecture, says:

“The most careful analysis of the construction of such great cathedrals as Rheims, Amiens and Ronen develops a knowledge of the arch and the pier that the architects of to-day could not excel. The entire interior is of cut stone. The arch ribs carry a stone ceiling. The thrusts are taken by an elaborate system of graceful flying buttresses. The walls are reduced to piers between great windows filled with painted glass. The least amount of stone consistent with stability appears, and yet this thirteenth century work is in good preservation to-day, magnificent monuments, illustrating the science and the art of the age.”

One of the indications of a nation's progress is the tendency exhibited in the building of permanent monuments illustrative of the character, taste and acquirements of the people. Men have only to turn to the page of history in evidence of the truth of this proposition. The greatness of Greece and Rome is seen in the imposing grandeur of the ruins which remain to-day, and attest to the high point attained by them in architecture. The Chicago

home is a distinct feature of American individuality, and residence architecture has reached a point in this country almost equal to that attained in any other civilized community on the globe. The use of stone in architecture, until within a few years past, has been limited to the construction of the most expensive residences. For a long time the sandstones were quite extensively used; but owing to their liability, especially in large cities, to succumb to chemical action from a heavily impregnated atmosphere, and also to become marred by defacement from various causes, a more enduring substitute has been sought after. The qualities aimed to be secured were strength and durability of color; for although a building be erected with the greatest care and with full regard to permanency of construction, the architectural effect and value may be impaired by the use of a material which, like some of the sandstones, will become a prey to atmospheric action.

The early Greek builders in Italy observed massiveness in construction. Later the Greeks imitated the Etruscans and cast aside the great rock-faced blocks or polygonal hewn stones, in favor of the square rocks, headers and stretchers. In the buildings of the Greek period the polygonal rocks were close-jointed; in those of the Etruscan period the beveled edge obtains. Fragments of stone in cement, later of uniform size were known as opus-incertum. Rocks cut in wedge shape, the point inward and the heads in rows, were known as opus-reticulatum. In the time of Hadrian an adaptation of this style was revived, the rock being set in a frame of brickwork.

The earliest brick building is the Pantheon. One period of Roman brickwork can easily be distinguished from another by measuring the number of bricks in a foot, and noticing their uniformity of size. The brickwork of Nero's time is said to be the best in the world. They are thin, narrow bricks, with very little mortar between them. After his time it gradually declined, till the cement is as thick as the bricks. The walls were not solid bricks all through, but the interior was made of rubble work, the outside course being entirely brick, while at every four or five feet, all through the construction, were laid great tie bricks, to keep the rubble work from shifting. The brick work was called opus-lateritium. The great tie bricks were usually stamped with the names of the consul or emperor, and the maker.

In the fourth century another system was introduced—opera-decadence, layers of brick and layers of stone. This continued to the thirteenth century. The buildings which the Greeks and Etruscans of Rome erected in the styles named are as follows:

STYLE.	SPECIMEN.	DATE.
Polygonal	Tusculum .....	.....
Opus-quadratum, first period, square edges.....	{ Veii .....	.....
	{ Gabii .....	.....
Second period, beveled edges.....	{ Palatine hill.....	753 B. C.
	{ Second wall of Rome.....	746 B. C.
	{ Aventine hill.....	600 B. C.
	{ Ostia	600 B. C.
Opus-quadratum	{ Tomb of Scipio.....	298 B. C.
	{ Temple of Hope.....	240 B. C.
Opus-incertum.....	Temple of Cybele.....	191 B. C.
Opus-incertum.....	Emporium	190 B. C.
Opus-quadratum	Tabularium	78 B. C.

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C. B. Kimbell.

About four centuries before Christ the use of Travertine stone and brick was introduced. The combination may be seen in the buildings named below:

STYLE.	SPECIMEN.	DATE.
Opus-quadratum	{ Tomb of Cecilia.....	78 B. C.
	{ Theater of Marcellus.....	13 B. C.
	{ Colosseum.....	80 A. D.
Bricks 6 to the foot.....	{ Pantheon.....	20 A. D.
“ 8 “ “	{ Aqueduct.....	60 A. D.
“ 7 “ “	{ Palace.....	80 A. D.
“ 6 “ “	{ Temple of Venus.....	120 A. D.
“ 7 “ “	{ Nymphæum.....	170 A. D.
“ 5 “ “	{ Baths.....	212 A. D.
	{ Walls of Rome.....	225 A. D.
	{ Basilica.....	300 A. D.

The Lemont or Athens quarries have played an important part in the building of Chicago. As early as 1849 stone was brought hither to be used in the construction of the first stone house at Chicago, on West Water street. Two years after the Illinois Stone & Lime Company was organized, with A. S. Sherman, John Kittering and William Giles members, and in 1854 J. A. Wells was employed as superintendent. In 1854 H. M. Singer and M. Talcott established their quarries, and in 1872 organized under the title, Singer & Talcott Stone Company. In 1870 Boyer & Corneau established quarries; in 1872, Bodenschatz & Earnshaw, and in 1879 the Chicago & Lemont Stone Company. The Excelsior & Riordan Stone Company were extensive operators in this field. The Lemont rock is a light-drab lime-stone when first removed from its bed of six to thirty-six-inch flags; but becomes yellow when exposed. Its greatest crushing force to one square inch in avoirdupois pounds is 22,301, and least crushing force, 15,690. In its rough state it weighs one hundred and eighty pounds per cubical foot, and in its dressed state, one hundred and sixty pounds. Its nomenclature is “dimension stone,” used for sidewalks, cornices and columns; “rubble stone,” for walls, and “riprap” for concrete, macadam or filling. Chemically considered it contains 41 per cent carbonate of magnesia; 36 per cent carbonate of lime; 17.33 per cent insoluble silica and clay, and 5.67 per cent of alumina, carbonate and protoxide of iron, water and alkalies. The rock is estimated highly for all building purposes except for heavy, deep cornices and for facades. All quarries in this rock contain more or less poor stone, but the reputation of a quarry rests, aside from the all important character of the stone, upon a proper sorting of the dimension, rubble and riprap grades. Instances have occurred where the riprap stone, which is intended for breakwater filling, had been worked into the rubble stone pile. Limestone for front has properly gone out of use. The old smooth ashlar fronts to be seen on Washington boulevard and Michigan avenue are now considered out of date. In sawed ashlar the grain is exposed to the weather, and, in consequence, soon shows the effect of such treatment. In the rock-faced and trimming work that is now so generally used, the stone rests as it does in the quarry, which enables it to better resist exposure.

What theation may accomplish to render the appearance of Illinois stone as fine as that of Indiana or Ohio sandstone remains to be seen. Theation is a new process of hardening building stones through the application of hydrofluosilicates. There are several soluble fluorides, each having its peculiar properties. One darkens the stone, one whitens it, another preserves the original color, and others color it indelibly. The process can be applied to old as well as new structures, and stone so treated becomes so hard it can be treated like marble or porphyrites. Kankakee rock has attained a popularity among builders unexpected a few years ago.

The crushing and tensile strength, in pounds, per square inch, of natural and artificial stones, is given in the following table:

CRUSHING.	
Aberdeen blue granite.....	8,400 to 10,914
Quincy granite.....	15,300
Freestone, Belleville.....	3,522
Freestone, Caen.....	1,088
Freestone, Connecticut.....	3,319
Sandstone, Aequia creek, used for Capitol, Washington.....	5,340
Limestone, magnesian, Grafton, Ill.....	17,000
Marble, Hastings, N. Y.....	18,941
Marble, Italian.....	12,624
Marble, Stockbridge, City hall, N. Y.....	10,382
Marble, statuary.....	3,216
Marble, veined.....	9,681
Slate.....	9,300
Brick, red.....	808
Brick, pale red.....	562
Brick, common.....	800 to 4,000
Brick, machine pressed.....	6,222 to 14,216
Brick, stoek.....	2,177
Brick-work, set in cement, bricks not very hard.....	521
Brick, masonry, common.....	500 to 800
Cement, Portland.....	1,000 to 8,300
Cement, Portland, cement 1, sand 1.....	1,280
Cement, Roman.....	342
Mortar.....	120 to 240
Crown glass.....	31,000
TENSILE.	
Portland cement.....	427 to 711
Portland cement, with sand.....	92 to 284
Glass, plate.....	9,420
Mortar.....	50
Plaster of Paris.....	72
Slate.....	11,000

The Naperville quarries have in recent years attracted much attention. The stone is particularly adapted to building and dimension work, and for monument bases. The dark-gray stone is extensively used for fine coursing and rock-faced work. The superiority of this Naperville stone is well shown by the voluntary testimonials of many experts who have used it. L. Watts, superintendent of bridges of the Chicago, Burlington & Quincy Railroad, writes as follows: "The Company has been using stone from the quarries at Naper-

ville, Ill., for a number of years past, in the construction of bridge piers and abutments, and for other masonry work. We have given the stone a thorough test, and find it superior to any stone that we have ever used, in the following particulars: It resists the frost and other atmospheric elements; it requires less labor in dressing, as it is very easily worked and comes out in very nice shape. The color is very uniform, and for general masonry work I know of no stone that will excel it or that is more economical for masons to use." The quarries are operated by the Chicago & Naperville Stone Company, whose yards are located at Western avenue near the Chicago, Burlington & Quincy crossing.

The Sioux Falls jasper quarries, at East Sioux Falls, South Dakota, produce a compact rock. It is practically a non-absorbent, and after a very exacting test it is claimed by this company to be found impervious to stain, either from the filth of the street or the volatile matter in the atmosphere. It is also fireproof; heating to redness has no effect, neither cracking nor disintegrating the stone. This has been demonstrated by practical as well as scientific tests. This renders it an exceedingly desirable building stone, for the reason that whatever beauty it may impart to a building will not be destroyed by atmospheric action even when the air is deeply impregnated, or by fire. This stone is of a granite color with a delicate pink tint; but it is also found in different shades. Its cleavage properties render it not difficult to work upon, and as a building stone its cost is reduced to a comparatively low figure. It is laid for pavement upon a foundation of crushed rock and sand, and the interstices are filled with concrete. Several fine residences in Chicago have already been erected in various parts of the city, and others are under contract. As a church building material it has been much praised. The Sioux Falls Granite Company, owner of the quarries, is represented at Chicago, with office in the Chicago Opera house.

So far as the subject of building stones relatès to Chicago, W. B. Lord treats it liberally and exhaustively. "Chicago," he says, "is the Mecca toward which the eyes and thoughts of every owner of an outcropping of stone within a radius of hundreds, and, in some cases, thousands of miles, are turned, with visions of prospective wealth. The wiser of these owners will break a fair sample from the outcropping, intelligently inform himself of its merits, and how they can be increased by human ingenuity, then cautiously seek a method to place the stone before those who use it. Others, with a limited capital at their disposal, will blindly proceed to develop their quarries, and sometimes the owners of a valuable property will use the poorest of business tact, thereby allowing others to reap the harvest. Many of these quarries prove worthless, although they appear promising at first. Some of them will answer for local use, but the product can not profitably be sent to other localities. But a very small majority are worked at a profit, and the number of the valuable ones is limited. As an example, the writer knows of a thoroughly practical stone man, who has been prospecting for more than a year, with unlimited capital at his disposal, in one of the largest stone-producing districts. He is not over particular, but as yet has not found what he can recommend for purchase. This is an indication that a quantity of worthless stone is shipped by unscrupulous quarrymen. The business of a quarryman is not all sunshine. His financial invest-

ment varies according to the stone he quarries, its location and the amount of business he does, but in every instance exceeds his first estimate of the amount. In most instances, a quarry investment is so uncertain that it can be quoted as a will-o'-the-wisp case of spending a dollar to save the dollar invested. The quarry may work poorly, and ignorant workmen cause many accidents and consequent expensive repairs. To all quarrymen, the desideratum is the possession of a deposit of salable stone, which can be produced at a profit. The owner of such a property, with good judgment and proper management, is sure to succeed. The sale of the products of the different quarries, especially in large cities, is placed by the owners under varied contracts, in charge of resident managers. In some instances, one firm will have the sale of the products of several non-conflicting properties. In the stone business, as well as in all other branches of trade, a certain number of unscrupulous men engage, and it behooves the consumer to consider well all stone presented for his examination, for it is a costly mistake to use a stone unsuitable for the purpose for which it is adapted. Scarcely a block in our great city is free from noticeable defect in stone. Formerly, the number of quarries shipping to Chicago was very few, and the choice was necessarily limited. This is one reason for the use of decaying stone, which is noticed in some of our buildings. At the present time, about sixty limestone and sandstone and many granite and quartzite quarries are shipping here. All grades, prices and colors are fully represented—the good, bad and indifferent, and the selection of good stone is by no means a difficult matter. A building is contemplated. The owner desires the value of his expenditure, which surely will not be realized if he is too much occupied to give particular attention to the principal and many of the minor details. He should not attempt to build until he can devote a fair portion of his time to investigation and to the work. The plea of ignorance is not justified by common sense, for the methods of workmen on buildings in progress all around us are open for investigation by those seeking information. Builders decidedly prefer soft stone, because it is easily worked and yields more profit, and generally that class of stone is used, as a natural result of indifference, or the mistake of endeavoring to arrive at grand results with little money. Over one hundred years of exposure of different building stones in various climatic situations is a practical test of their durability. If the results of this test are taken advantage of by those contemplating building, instead of wasting capital as of matter of indifference, Chicago will be a city of enduring structure as well as of phenomenal growth. When owners realize the unfortunate mistake of using stone that is not time-tried or known to be durable, and display the same business tact in the selection of stone as they display in the accumulation of money, demand will be made for such stone as should go into buildings.

“There is a certain class of cheap construction necessarily demanded in a large city. There is also an abundant supply of suitable material for such construction. A statement appeared some time ago, that brick was the only fireproof building material. Many varieties of silicious sandstone (for instance, the buff freestone from Amherst, Ohio), resist a white heat registering 2,370 degrees Fahrenheit, where used for linings and hearths of iron furnaces. A hornblende syenite granite and some of the primary rocks are practically inde-

structible, having had their baptism by fire centuries ago. In fireproof construction there is a choice for the architect. He is not confined to brick and terra cotta, for there are beautiful rocks among the primary formations (quartzites) and sandstones, presenting colors which would please the artistic eye, suitable for the purpose, susceptible of a fine carved effect, and readily worked. Why should not the monotony of red building material be relieved by solid, handsome buildings of a pleasing variety of colors?

“The requisite qualities of a good building stone can soon be learned by a close observer. Costly experiments in structures in various parts of the country have most of all aided in the development of the economic part of this knowledge. The application of chemistry separates constituent parts, and the microscope, that wonderful and inseparable companion of the geologist, is most fruitful in determining component parts, and leads most directly to the desired results. In the selection of building stone particular attention must be given to the climate of the locality where it is to be used. Stones which readily absorb water are not likely to be durable in a variable climate, as water softens the stone, allowing the elements to wash it away from the walls of a building, or it freezes in winter and splits the stone. Especially do not use such a stone at or near the ground line without thoroughly protecting it from absorbing moisture, by laying a thick course of hot asphalt on the top and down the outsides of the foundation walls. Lamination in stone is an indication of weakness, as stone in which it appears will occasionally slip under pressure and shale off, when set on the edge. Stone often varies from different parts of the quarry, and also from different parts of the same bed, necessitating very great care in its selection. Stone quarried in summer will lose its quarry water by evaporation, and stand better in a wall. When carbonate of lime is the cement, a quantity of it is held in solution by the quarry water. As the stone loses the quarry water by evaporation, or dries out, the carbonate of lime, which is held in solution, is deposited in the stones as additional cementing material, and, therefore, makes it more compact. Freestone containing oxides of iron as a cement, sometimes hardens by exposure to the weather, a process supposed to be caused by the oxides of iron passing to a higher degree of oxidation by absorbing oxygen from the atmosphere. When silica is the cement, and held in solution by quarry water and once crystalized, it then becomes insoluble, and the stone will not be softened by exposure. This is the reason of the durability of a silicious sandstone. The disintegrating ingredients of a stone should be the first consideration. The principal agents of destruction to a granite are epidote, kaolin, calcite pyrite and iron oxides. They are all readily detected by the microscope, and, if existing in quantities, by the eye. Epidote gives it a green color; its crystals are always green. Kaolin (pure clay) is decomposed feldspar, and readily distinguished by its white, soft, minute, scaly appearance. When free from soluble alkali it burns perfectly white porcelain ware. Calcite, the mineral which is the base of all limes, can be discovered by its effervescing actively with dilute acid. The microscope shows it in crystals, if not in the form of shells. Pyrite (sulphide of iron) is distinguishable by small specks of yellow metallic luster. The various oxides of iron are distinguished by their color, and show wherever they exist. Iron pyrites (iron sulphides) and

iron oxides are the principal agents of decomposition in limestones and sandstones, unless properly incorporated in the stone. Iron pyrites, unless in sharp, well-defined crystals, are a serious detriment to a soft stone, as they decompose readily, stain the stone and cause it to blister or shale, as noticed in our Ohio stone sidewalks. In a hard, non-absorbent stone the soft pyrites will be washed away and leave a hole. In the Wyoming Valley, Penn., bluestone, the iron pyrites are sharp, thoroughly disseminated crystals, and their presence is advantageous and assist in making it a durable stone. When they exist, oxides of iron are held in solution in soft sand stones in the quarry, by water of hydration, and are carried around and through the stone by percolation. The stone then loses its color and cement and falls to pieces, unless it retains enough to hold the particles of sand together. Generally speaking, if rock in a quarry lays above drainage, its color is uniform and permanent, as the stone has been traversed by atmospheric waters, and all possible oxidation has taken place. Brown sandstone should be quarried early in the season to let the water evaporate from it and set the color. Sometimes ocher is the color; it can readily be washed out. Such a stone is generally dull and with no life.

“Among the distinguishing features of color and durability in sandstones, which are due to iron oxides, the following may be mentioned: Red and brownish-red are due to iron in the anhydrous, sesquioxide state, for instance, the Lake Superior. Bright yellow color is due to the hydrous sesquioxide of iron; an example is the Amherst (Ohio) sandstone. Yellowish color is due to hydrated ferric oxide, as noticed in the Marquette variegated sandstone. Bluish or greenish color is due to the ferrous oxide, as noticed in the Michigan sandstone. The brighter or more lively color the stone possesses the more unmistakably is shown a less hydrated or watered state of the iron cement, in consequence of which a stone is hard unless the iron is incorporated in the grains of sand which compose the stone and thereby give the stone the color, in which case the strength of the stone depends upon the amount of the cement. A dull, lifeless and bluish or greenish color is liable to turn by the action of the oxygen of the atmosphere to a dirty red, either evenly or in spots, because the more hydrated ferric oxide absorbs nitrogen and carbonic acid from the atmosphere. Such a stone will rapidly disintegrate. Decided blue or gray color is mostly caused by the carbonate or protoxide of iron, although blue is sometimes a finely disseminated iron pyrites and occasionally an iron phosphate, as in the New York blue, which contains pyrites and a small portion of the phosphate.

“The weather acts on stone both physically by rain, wind and frost, and chemically by the solvent action of the atmospheric impregnated water, and the oxidizing action of the oxygen of the atmosphere, which bleaches and softens carboniferous and bituminous sandstones; for instance, some of the Carbondale and Ohio sandstones and limestones, because the organic matter disappears in the form of a carbon dioxide. The acid atmosphere of manufacturing cities is injurious to stones composed largely of carbonate of lime. In wet, smoky localities sulphuric, nitric, carbonic, hydrochloric and other acids are taken up from the air by the rain and spread over the surface of buildings; therefore, soft, porous limestones and sandstones

which contain calcareous matter and more hydrated iron oxide as a cement are susceptible to their attack and should not be used. In winter time much acid is condensed with a small quantity of air, and its effect is most destructive. The life of a building stone is shortened by alternate freezing and thawing, changes from dryness to moisture, and difference of temperature at the same moment from the outside and the inside of a building. The direct rays of the sun will reach one hundred and twenty degrees on the outside of a building, while the inside may be but seventy degrees, and in winter the outside may be twenty degrees below zero, and the inside seventy degrees above; either situation involves a tremendous strain to be borne by a stone, exclusive of what is expected of it in a building. Sometimes the life of building stones, in which carbonate of lime is the cementing material, is prolonged by the formation of a thin pellicle of black sulphate of lime, which is wholly insoluble in acid or water. This can be noticed in many of our business buildings by their dingy appearance. It may be fairly said that the durability of a stone depends on its impermeability to water, its density, evenness of texture, and amount and kind of binding material it contains. Each given point must be carefully considered before condemning a stone, as what it lacks in one constituent may be made up by a superiority in others. Many stones for building purposes have been introduced into Chicago by enterprising persons, and now examples may be seen from almost every section of the country and some foreign ones. Scarcely time enough has elapsed to test the durability of all of them. Some of them are disintegrating, and such as are proving unreliable can be avoided in the future, a precaution which must result in the erection of durable buildings.

“Building stones are geologically classed as granite, sandstone and limestone. Each formation is generally known, but sometimes a limestone is so near a sandstone in formation as to be difficult to distinguish, and *vice versa*. At least two-thirds of all known elements exist in granite. Its principal components are quartz and feldspar. Quartz is the crystalline form of silica. It is subject to many variations in form and appearance, but none in composition, and is the cementing material of granite. Quartz always contains pores partially filled with fluids, which expand and explode when heated, thereby disintegrating granite. For this reason granite is not fireproof. Feldspar is very complex in composition, and its variations are the characteristics of color and durability, and its consideration is the most important element of study in granite. The white variety of soda feldspar is the most durable, although the columns and pilasters of the porch of the First National Bank is an example of a very handsome and durable red. They came from St. George, New Brunswick. Mica appears in two colors, black and white, in all granites. It is an element of weakness, does not readily polish, nor retain a polish, because it is too soft, and therefore, if in abundance, is objectionable for polished surfaces; it has a parallel cleavage. If hornblende takes the place of mica, the granite is called syenite, and is generally finer in grain, as this mineral exists in a granular form; its color is white, black and green. It polishes easily and retains the polish, and can be readily distinguished from pyroxene, although similar in appearance, by the pyroxene being brittle, and pitting in a polished surface, and from mica, by cleavage

and hardness. If its color is a deep brown, decomposition has set in. Hornblende granites are classed among the best. The remainder of the constituents (except the oxides of iron which have been referred to) are microscopic and of no particular value as a distinguishing feature. Very little syenite is quarried, although many excellent varieties are awaiting use. A hornblende syenite will stand a very severe fire test, because it contains but a small percentage of quartz. Granites are subject to disintegration by chemical decomposition of the feldspar. It is principally the potash spar which changes by the action of impregnated atmosphere. Fine-graded granites are the best for building purposes. When quartz is in excess granite is difficult to dress. When potash spar is in excess and in large crystals, speedy disintegration is to be looked for, and when mica is in excess the stone has a tendency to exfoliate. Gneiss is stratified granite. Its constituents are about the same as granite. It contains an abundance of mica, which lie in parallel planes. It is a beautiful, durable and readily worked building rock, has been used in many fine residences, and has withstood severe fires. Examples of it are Mr. Hankins' residence, on Michigan avenue, the Counselman residence and others. Greenstone, a beautiful, durable and easily worked building stone, is a hydrosilicate of magnesia, the green color of which is due to a small percentage of chromium oxide. It is principally used in ashlar, as it is only quarried in small pieces. The Otis residence, on Michigan avenue, is an example. This stone becomes dull by exposure.

“Sandstones are composed of grains of sand cemented together with either silica, carbonate of lime, or an oxide of iron. The texture varies from a very fine to a very coarse, and the many colors are due to the oxides of iron. If the cement is silica, the stone is light colored and generally hard and durable. When carbonate of lime is the cement, the stone will soon crumble, if soft; and if hard, may prove very durable, in localities free from an acid atmosphere. In a sandstone the fracture should be bright, clear and sharp, and the grains of fairly uniform size and well cemented together. The appearance of earthy matter (noticed by dull color) is an evidence of weakness and poor weathering. Variegated stones are not reliable, as they contain soft spots. Sandstones having the iron cement in the anhydrous sesqui-oxide state, present a decided red or brown color, which are points in their favor for use and durability, and likely not to be affected by exposure. Such a stone, with the other attributes necessary, is a very durable one. It is desirable in all sandstones to expose them for a time before use, as such stones as are fit for use are strengthened by the cement setting; and the treacherous blocks will show their defects. This will be objected to because the stones freshly quarried are softer and more readily dressed, but in a soft stone should be insisted on. Sandstones containing an iron oxide as a cement are generally preferable, as their dark, rich red or brown color is in their favor. Most of them work well, especially those of the triassic period; for instance, the Connecticut brown sandstone and some portions of the quarries of the Potomac Seneca red sandstone.

“The Connecticut brown sandstone has a tendency to split, and if care is exercised in placing this stone on its bed, and not using it for projections, platforms and steps, or if caution is exercised in selection for these purposes, better results can be arrived at than are

shown in some of our handsome fronts. The Potomac red sandstone is fine, close grained, homogeneous, varying in color in different parts of the quarries, from a red to a reddish brown, and never presenting a mottled appearance. This stone is peculiarly adapted for platforms and steps, and examples can be shown of its excellent weathering and evenness of color in buildings. Aluminum, showing clay, enters largely into the composition of the Long Meadow, Massachusetts, brown stone, of which the upper stories of the Marshall Field wholesale building and some later structures are built. As clay is a free absorbent of moisture, its disintegration is sure to occur in time, and frost will exfoliate a stone of this description. The carboniferous period produces a brown sandstone, an example coming from near Carbondale, Illinois; Parke County, Indiana, and near Killbuck, Ohio. The carbonate is an excellent stone, but not of a decided enough color to rank among the most desirable building stones. The Parke County and the Killbuck stones will answer for cheap constructions. The products of the Potsdam period, for instance, the Vert Island (Lake Superior), are hard to work and very often run into quartz. Iron pyrites should be thoroughly searched for, as they change the color by decomposition and absorption and injure the beauty of many fine buildings with rust-colored spots. Stain from oxide of iron, iron pyrites and petroleum are readily noticed in many sandstones, especially in those of Ohio. Past experience with such stones warns us that if stains exist the stone should be thoroughly examined and the objectionable portions removed. A good sandstone is close grained, uniform in color and texture and free from stains. The greater the amount of moisture absorbed by the sandstone and the smaller its pores the greater will be the disintegrating effect of the frost, as the frost will have a better chance to force the particles apart.

“A sandstone weighing less than one hundred and thirty pounds per cubic foot, absorbing more than five per cent of its weight of water in twenty-four hours, and effervescing with acid, thereby showing a carbonate of lime cement, may be doubted for durability. Close-grained, soft sandstones absorb water and freeze in the winter, which renders them brittle and hard to work. Among the many varieties of sandstone in use, the Pennsylvania, New York State, and the North River bluestone, all of the same formation, may be mentioned. It is fine, compact, massive stone, of a dark bluish-gray color, and will not scale or crumble. The expense of dressing is more than repaid by the handsome and substantial appearance. It is much favored in the East, and will make an excellent flagging as well as a building stone. The Ohio sandstones have been freely used in Chicago, but now you will only occasionally notice their use. Their reputation was injured by carelessness in selecting them. The Berea stone is filled with little specks of brown oxide. When this stone is separated from portions containing sulphide of iron, etc., it makes a good building stone. The Amherst buff stone is of a light, uniform, lasting color, as the rock is above drainage, and has proven to be one of the most promising in regard to durability of the sandstones in use. Its colors are buff and blue, the buff overlying the blue. The Sunbury blue freestone is uniform in grain and color and free from iron stains. Sixty years of exposure have not marred the lines of carving, and show an excellent resistance to wear. About twenty-five miles from Des Moines, in Iowa, lies,

massive, unstratified and above drainage, a quarry of a most singular mottled sandstone, red, white and bright yellow. A portion of this quarry is a bright yellow and not mottled. It is a very odd stone, and easily worked.

“Carbonate of lime is the principal constituent of limestone. If carbonate of magnesia forms a portion up to twenty per cent, it is called magnesia limestone, and is used only for foundation rubble. Magnesian carbonate has the property of absorbing nitrogen and carbonic acid from the atmosphere to a higher degree than calcium carbonate; therefore limestones containing magnesian carbonate are less durable than pure calcareous limestones, and more or less disintegration must be expected. If more than thirty per cent of carbonate of magnesia exists, it is called a dolomite, and if capable of taking a high polish it is called marble. The nearer the magnesian limestone is to a dolomite the better stone it is, and a dolomite containing forty per cent of carbonate of magnesia, and five per cent of silica, or more, makes a good building stone, as both of the crystals are homogeneously crystallized together, to be inseparable by mechanical means. An example is pink Kasota limestone, which is used in considerable quantities in Chicago for building purposes. Our Lemont and Joliet dolomites were much used for both building and flagging. Because of their generally poor weathering qualities, the oolitic limestones (from Indiana) are fast superseding them for building fronts, and the oolitic stone ought to come in good demand for flagging, as it is a superior stone for that purpose. At one period much of this Joliet and Lemont stone was used for fronts, but experience has demonstrated that more suitable building material can be procured for that purpose. The same defect in the stone, that is, a yellow stain and shaling, shows in the quarry as it does in the building, and a knowledge of it should have been taken advantage of before using the stone. In a very short time this stone requires a coating of paint. The best quality of this stone is free from earthy matter, white or blue-gray in color, containing but little oxide of iron, free from flint, is taken from between the laminations and planed into vault covers and sidewalk stone.

“In selecting a limestone it should be seen that it is compact and homogeneous and not too coarsely crystalline in structure, and free from a dull, earthy appearance, oxides of iron, iron pyrites and carbonaceous matter. The sulphuric acid of the atmosphere converts the carbonate in a magnesian limestone to the sulphate of magnesia (Epsom salts), which is washed out by rain and stains the stone. This is noticed in many of our brick buildings with limestone trimmings. Limestones are formed by deposition of organic remains, or chemical precipitates from sea water. In the shell limestones of Florida the fragments are plainly seen, lightly cemented by the same material. In the other limestones the shells, fossils and carbonaceous matter are almost or altogether obliterated through metamorphism (heat and pressure), and assume a partial or perfect crystalline form. A quarry of limestone in one of the suburbs of Chicago contains petroleum thoroughly impregnated through it, which exudes after a short exposure to the air and forms an unsightly covering to the stone. It is with difficulty prepared for the wall, as the stone very often breaks while being cut. It is very well suited for rustic work, and has been used to some extent for fronts. The oolitic lime-

stones of Indiana were formed by the natural pulverizing of the remains of marine shells, corals, etc., to the condition of a fine sand. The soluble impurities were washed away, and the insoluble residue reunited into a solid rock of a carbonate of lime. Its formation in the quarry is homogeneous, massive and solid, generally about forty feet thick, not stratified with the clay partings that exist in the Joliet limestone quarries, and with no well-defined cleavage. All the samples of this stone show from ninety-five to ninety-eight per cent of carbonate of lime, of a rare degree of purity, which is indestructible by ordinary atmospheric influences, free from acids, while ferric oxide and alumina, to which most perishable stones owe their failure, here occur only in a proportion of less than one per cent. It weighs about one hundred and fifty pounds per cubic foot, and the ratio of absorption is one to thirty. In some of the quarries the stone is fossiliferous, in others soft spots abound and the texture is not close, so for these reasons care should be exercised in selection. The perfect unity of the particles of the better qualities of this stone renders it quite elastic, producing a clear, metallic ring, which is a distinguishing feature, and adapts it without cleavage or disintegration to our changeable climate. Its colors are pure white and shades of buff and blue. The blue lies under the buff and is a harder stone. The facility of working this stone, both by hand and machinery, and its strength and durability make it desirable for architectural purposes where a light-colored stone is desired. When using oolitic limestone the stone should be set in lime mortar and not cement, for the reason that good lime mortar is generally free from the impurities—iron oxides, magnesia, gypsum, potash, soda, etc.—which invariably stain the stone and are found in most all of the cements in use. Another advantage in the use of lime mortar is in the cost being much less than cement and answering this purpose equally as well. Although it has not had the test of time to thoroughly prove its lasting qualities in various climatic situations, each year of exposure of the better grade of this stone is accumulating the evidence shown in the quarries that it is a most excellent building material, and that its adoption will not prove an expensive experiment, as was the case with our local limestones.

“Investigation causes surprise at the disposition of many to choose a stone on account of color and cost, regardless of durability. Better use brick. The following points may be of value. If a new stone is presented, compare it with stones of the same kind which are known to have been exposed for a long period. Carefully observe the results of actual construction of various stones, after time is allowed for weathering. Examine the weathering of the stone in its natural deposit, if the quantity to be used will warrant the time to visit the quarry, and if possible use stone which lies above drainage.”

The quarrymen, stone cutters and marble cutters established here before the year 1859 did not exceed thirty in number. From 1859 to 1871 many additions were made, and with the additions, improvements in quarrying and cutting were recognized. Louis Marsellani was a stone quarrier here as early as 1843.

The Singer & Talcott Stone Company was organized in 1854, with M. Talcott, president; H. M. Singer, vice president; S. S. Kimbell, secretary and C. B. Kimbell, superin-

tendent of the works, at Lemont. In 1872-3 this company employed three hundred men, used the only stone planer in the West, owned eight canal boats and one hundred horses. Their office and yards were destroyed in the fire of October 8 and 9, 1871, but on October 11, they resumed business, and during the ensuing nine months laid four miles of machine-dressed stone sidewalk in the city. In 1860 a flagstone was supplied by this firm from their Lemont quarries, 24½x16 feet by 10 inches, which weighed about twenty tons. It was placed outside Reed's house, on Lake street.

W. C. Deakman's stone yards, between Franklin and Fifth avenue on Harrison street, were established in 1853. He received the rock from Lemont and Joliet, in Illinois, and Marquette and Jackson, Mich., and gave employment to two hundred and sixty men here. In 1873 he supplied the cutstone for the Criminal courthouse here.

Peter Wolf & Sons were established in 1854, and re-established in 1866, when the firm represented the Marquette Brown Stone Company, with office at 428 Fifth avenue. The stone for the old Purington building, on Wabash near Congress, and A. C. Hesing's buildings, on the north side, were supplied by this firm prior to 1873.

The J. G. Gindele Stonecutting Company, at 498 Lumber street, was established in 1854, and supplied the stone for the Tribune building, the Reaper block, Galbraith's block and others.

Edwin Walker's stone works were established in 1857. In 1873 the works at the corner of Harrison and Franklin streets employed three hundred men. Stone from the Lemont quarries was generally used, and from the works, much of the stone in the Singer building, corner of State and Washington streets; in the Criminal court building, Illinois and Dearborn streets, and in the Marine bank building, Lake and La Salle streets, was sent forth.

The Wenthe & Maessinger stone works, on Franklin street, located on the block bounded by Franklin street, Fifth avenue, Jackson and Van Buren streets, in 1873, then employed three hundred and fifty men. They were established in 1858.

L. H. Boldenwick's works, at 11 to 33 Taylor street, in 1873, were established in 1861. The stone for the new Tremont house, some of that for the Grand Pacific, Peter Page's building and the First National bank building of 1873 was supplied from these works.

Henry Furst's stone works, at 443 Fifth avenue, after the fire, date back to 1861. He furnished the stone for the City National bank building, the Hough building, on Wabash avenue and Harrison street, Rawson's, on Clark and Madison streets, Dr. Davis', on Washington street near Wabash avenue, that on the southeast corner of Wabash avenue and Jackson street, and a number of other large buildings, erected prior to 1873.

Henry Kerber's stone yard, established in 1865, was located at 340 Fifth avenue in 1873, where two hundred and twenty-five men were employed. Within two years after the fire he furnished stone for the Methodist Church block, the Gowdy & Chandler building, Clarke & Layton's twelve houses and W. W. Strong's nineteen houses.

Jacob Furst's stone works were established at 460 Fifth avenue in 1866. Within the succeeding seven years the stone for Hale & Company's building on State and Washington

streets; Wilks & Barclay's at 141 State street, Patterson's on Calumet avenue, and many other houses was cut in his yards.

Peter Neu & Company established stone yards at 350 Fifth avenue in 1866. The stone for the following-named structures was cut here prior to 1873: Edson Keith's residence on Prairie avenue, the Michigan Avenue Baptist church, N. P. Wilder's building on Washington street, McGee's on Randolph and La Salle streets, the Commercial National Bank building on Dearborn and Washington streets, the Keith Brothers' store on Madison street near Market street, and other important buildings.

John Gibson's stone works, established in 1866, occupied the south side of Harrison street between Fifth avenue and Franklin in 1873. Within two years after the fire this yard furnished the stone for the Mercantile building, La Salle street; Busby's building on the site of Crosby's opera house; the Partridge and other leading houses.

McKcon & Kelly's stone works, established at 266 to 270 Twenty-second street in 1868, formed a leading industry in 1871-3; while Taylor & Batchen's established the same year on the corner of Harrison and Franklin streets was no less important. The latter furnished the stone for C. H. McCormick's two buildings on South Water street, Hall's residence, corner of West Washington and Lincoln streets; McCord's eight houses on Cottage Grove avenue, Hoffman's buildings in Ellis Park, the old Masonic hall on Cottage Grove avenue and other buildings.

Earnshaw, Worthy & Co. established yards in 1869 at 264 South Water street, and made a specialty of stone for foundations and sidewalks. O'Connor's stone works on Twenty-second and Purple streets were established in 1871.

Burkhardt & Company established works on Kingsbury and Ohio streets in 1872, employing one hundred and forty men. The cut-stone for Turner hall, the Day building on Wabash avenue and Washington street, St. Xavier convent and Female academy on Twenty-ninth street and Wabash avenue was furnished from this yard prior to 1873.

P. Fanning's yards at 458 Fifth avenue employed thirty hands in 1871. Stone for the Grand Pacific hotel; Cobb's buildings; Fuller's on Dearborn street; the Kingsbury block, Randolph and Clark streets; Hess & McGinness' block, on Wabash avenue and Adams street, was supplied by him.

Graveson's stone works on Cologne street employed one hundred and fifty men at the beginning in 1872.

Diener & Robinson's works were established the same year (1872) on Harrison and Franklin streets. From this yard the cut stone was furnished for the Morrison buildings, Allen & Barlett's four buildings on South Park boulevard near Forty-first, C. P. McKay's two buildings on Wabash and Twenty-fifth and other houses. Sherman, Haley & Co., employed one hundred and sixty men, from the beginning of the firm in 1872, in dressing Kankakee sandstone. The stone for the Sherman house, Union National bank and other large buildings was supplied by them. Fletcher Brothers' stone works were established at 65 Third avenue in 1872, William Rudling's yards were at 1264 State street, and Carroll & Ryan's works at 319 and 321 South Clinton street in 1873.

The Chicago Marble Manufacturing Company was founded in 1845, but not incorporated until 1872. At that time Orin Sherman was superintendent, and one hundred and twenty-five men were employed. This concern supplied the mantels, grates, etc., for the Gardner house, Matteson house, Sherman house, Grand Pacific and Tremont, prior to 1873, as well as for many dwelling houses. The yards were located after the fire at 713-15 Wabash avenue. The Greenman Marble Works date back to 1854 at 384 West Lake street. In 1866 Atkinson & Lord, succeeded the Illinois Soapstone Company and carried on the marble and soapstone works at 170 Adams street. They had their yards at 222 Washington street, until burned out in 1871. The Italian marble works of H. McMenemy, D. Deegan and James Mahony, at 119 West Washington street, produced mantels, furniture tops, plumbers' slabs, etc.; the McCulloch works at 563 West Madison, founded in 1867, were also devoted to this class of work, as well as James Warrington's marble and Scotch granite works at 117 West Monroe in 1868. The Garden City marble works, 174 South Jefferson street, and R. Ormsby's at 85 East Twelfth street, date back to 1871. In 1872 the Northwestern Marble & Granite Company was organized, with H. C. Hoffman, A. Mellick, F. M. Mellick and T. T. Thirsk, officials. Yards were established at 147-151 South Jefferson street, and twenty-five men employed. During the year ending June 30, 1873, six hundred and twenty-five marble mantels and other articles of equal value were produced. The Gowen Marble Company, established in 1869, was incorporated in 1872, when one hundred employes were enrolled. The yards at 11 North Clark street were burned in 1871, and again in November, 1872. They were the first to rebuild on the north side in October, 1871.

The stonecutters of 1849-50 were Patrick Naven, Alois Ackerman, John J. Bichel, Henry Breidenback, John Irwin, John Cassidy, George Green, Martin Kelly, Louis Monett, D. C. Skelley, P. F. Roffinot, Owen Rielly, John Schneider, John Swaub, Peter Volf.

A. S. Sherman's marble yard and buhrstone factory, with W. S. Steele's marble works, on Market street near Washington street, were the only marble industries here in 1849. Henry Wilson was a marble mason, while William Kettlestring and John Schumer, Jr., were marble engravers. The marble workers of 1859 were Beecher & Powell and James E. Cassidy, 182 South Clark; Edwin L. Gowen & Co., 130 North Water; Knerr & Lauer-
mann, 213 North Clark; George Oswald, 53 West Madison; Schureman & Melick, 190 Clark; Orin Sherman, 240 Lake; John Stockinger, 186 Griswold; John Wilson, 247 Chicago avenue, and H. & O. Wilson, 42 Washington.

The owners of stone yards and quarries in 1859 were Louis Boldenwick, on Wells (Fifth avenue) near Harrison; Mark Clifford, Canal near Ewing; W. Cook & Co., Quincy and Market; William Deakman, 389 South Wells (Fifth avenue); George Gaylord, 65-66 Charles street. J. G. Gindele, Wells (Fifth avenue) near Polk; Levi Griswold, 58 West Lake; Francis Grunbill, Griswold and Polk; Illinois Stone Company, northwest corner Taylor and Wells (Fifth avenue); A. T. Merriman & Co., Franklin near Jackson; Levi W. Park, Wells (Fifth avenue) and Jackson; John Phiffer, State near Springer; Peter Roffinot, 364-366 South Wells (Fifth avenue); Singer & Talcott, Quincy and Market; Daniel C. Skelly, Harrison



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near Wells (Fifth avenue); R. Taylor & Son, 58 West Lake; A. H. Taylor & Co., Charles near Van Buren, and Wolf & Sproehule, 137 Edina place.

The principal stone contractors of 1869 were W. G. Cooper, Willson & Co., Henry Furst, J. W. McGinness of the Illinois Stone Company, Singer & Talcott and the Frear Stone Manufacturing Company.

The quarry owners and dealers in stone in Chicago at the beginning of June, 1891, are named in the following list: *Acme Oolitic Stone Company, Arcadian Brown Stone Company, Ashland Brown Stone Company, Bayfield Brown Stone Company, Belt Lime Stone Company, Bloomington Oolitic Stone Company, *Bodenschatz Bedford Stone Company, *Carbondale Brown Stone Company, Chicago Pressed Granite & Stone Company, Chicago Stone Company, Chicago Union Lime Works, Chicago & Indiana Brown Stone Company, Chicago & Naperville Stone Company, Clarksfield Stone Company, Cleveland Stone Company, *T. C. Diener, East Chicago Stone & Brick Company, Elyria Stone Company, Euclid Stone Company, Eureka Rubbing Stone Company, *Henry Furst & Co., *Jacob Furst & Co., *C. Gustafson & Co., *Frank Hahn, George H. Hartwell & Son, *H. L. Holland, Illinois Stone Company, Indiana Greenstone Company, Indiana Oolitic Lime Stone Company, Edward Johnson, William Johnson, Joliet Pioneer Stone Company, Joliet Stone Company, Joliet & Chicago Stone Company, Killbuck Brown Stone Company, Kimbell & Cobb Stone Company, Alphonse Leon, Linden Brown Stone Company, Lord & Griswold, Malone Stone Company, Robert W. Maxton, John McArthur, Michigan Stone Company, Mitchell Stone Company, Minnehaha Granite Company, Parke County Brown Stone Company, Portage Red Stone Company, John Rawle, Sanger, Moody & Steel Stone Company, Otto Schanzenbach, Patrick T. Sherlock, Alexander F. Shuman, *Sioux Falls Granite Company, *P. G. Stoll, Vernon Brown Stone Company, Warmington Stone Company, *Watson Cut Stone Company, *Western Stone Company, White River Quarry Company, Peter Wolf & Son, *Young & Farrell.

The cut stone contractors include the above-named firms or individuals, whose names are preceded with the star, together with J. S. F. Batchen, 207 Brown street, E. R. Brainerd, G. T. Budach, Edward Burke, Edward Burkhardt, Falter Brothers, Findeisen & Stein, James Galvin, Godfreaux Brothers & Co., Jacob Happarle, Ernst Heldmaier, Henne & Steiglitz, Gott. Hafner, Hagan & Son, William Henry, Hlinka & Kaspar, F. O. Johnson, P. Kempe & Co., Henry Kerber & Son, Keyes & Thatcher, Paul S. Larsen, Larson & Schober, N. A. Lawson & Co., Alphonse Leon, Lyendecker Brothers & Matt, John W. Mann, Charles Manske, McFarlane & Gibson, Nebel & Schick, James Oates, O'Donnell & Ormsby, O'Hayer Brothers, Oplt & Dinter, Jacob Pickel & Brother, John Rawle, William Raxworthy, David Reed, George Reilly, Rutishauser & Keller, Jacob Schaubacher, Schoen & Co., Snesmlech Brothers, John Tait, Tapper & Co., and Samuel E. Webbe. Fletcher & Hunter are among the stone carvers of the city.

The Western Stone Company is the successor to the Singer & Talcott Stone Company, the Excelsior Stone Company, the Chicago & Lemont Stone Company, the Corneau Stone Company, Bodenschatz & Earnshaw Stone Company, and the Lockport Stone Company, a few of them pioneers and all old workers in stone.

The associations of quarry men are powerful organizations, working quietly, but effectively. Some years ago, when rubble stone was selling at \$7 to \$7.50 a cord, the different quarry owners of Lemont and Joliet formed what has until recently been known as the Chicago Building Stone Company. The result of the organization was the raising of the price to \$8 and \$8.50. This advance was something long desired by the stone dealers, and seemed to assure the pool a permanent existence. But complications arose and gave life to much dissatisfaction among the members which culminated in the breaking up of the association, its fall being attributed to the weakness of the management. The quarries at Lemont and Joliet do not all produce the same quality of stone. This the builders well knew; hence, they rebelled against paying for an inferior grade the same price as the best quality was quoted at; but while the company controlled matters they had no alternative. The management proved unable to grapple with this question, or was unable to resist the influence of the dealers in the poorer grades who were the gainers, while this non-discriminating course was followed. If a graded scale of prices could have been brought about, opposition to the organization would not have been made, but no quarryman would acknowledge that his stone was anything but first grade, and if reduction had been forcibly attempted his desertion of the cause would probably have followed. To make the association a success, every firm had to be included, so such a course would have been disastrous. The discontinuance of this pool lowered wholesale lot prices about five per cent, but the retail figures of the association were maintained. As a matter, of course, the return to individual handling of stone caused more fluctuations in prices and resulted in the lowering of stone quotations. The selling of the different grades on their merits, forced the firms, who handle the inferior grades, to curtail if not close up their business. A number of firms were added to this class while the association prices were obtainable. The existence of the association made it possible for contractors and dealers to figure with more certainty than when the changes in values by individual competition had to be counted on.

In November, 1890, reorganization was effected under the title American Stone Company. This is an amalgamation of the stone producers of Northern Illinois, including the Joliet Stone Company, Singer, Moody & Steele Stone Company, Joliet & Chicago Stone Company, Pioneer Stone Company, Douglas & Keller Stone Company, Young & Farwell Diamond Stone Company, Globe Stone Company, Crescent Stone Company, Zarley Stone Company, Joliet Pearl Stone Company, Kraker Stone Company, Roger Brothers, D. G. & F. D. Murphy, and James O'Reilly. Of the \$2,000,000 capital stock, \$500,000 in six per cent bonds payable in twenty years, was issued at once. The working capital was fixed at \$250,000. With the exception of the stock held by a few outsiders, among them being G. B. Shaw, president of the American Trust and Savings bank, Edward Koch, of E. Dreyer & Co., Charles Henrotin and Adolph Loeb, the purchase simply amounts to an interchange of stock, between the old companies and the new one, on a basis well determined upon. The combine resulted in great economy to the stone dealers, which was the main object, by distributing the output of stone more evenly, according to the adaptation of the respective quarries for any particular

kind of stone, and further the quarry employes could be more easily handled, and the possibility of strikes almost entirely abolished. It was claimed by the new company that the price of quarry products would be cheaper in the future. The figures for last nine years show a product of seventy thousand cubic yards of rubble stone, and over two million feet of dimension stone. The contracts for the year ending October 1, 1891, owing to the competition which existed, are already in excess of the preceding twelve months. The prevailing price at which stone is now being sold by the Western Stone Company and Joliet companies, is much less than the price charged during the existence of the Chicago Building Stone Company.

There were other associations represented in the old and new consolidated associations, but the task of obtaining their official records has not been accomplished, and for this reason a mention of their officers can only be made. The election of officers for the Quarry Owners' association took place in April, 1888, when John Rawle was elected president; Robert Harper, vice president; E. T. Malone, treasurer; A. F. Shuman, secretary; C. G. Singer, John Worthy, E. E. Worthington, C. B. McGinness and J. S. F. Batchen, directors.

The Quarry Owners' association, of Chicago, elected Gen. John McArthur, president; John Rawle, vice president; E. E. Worthington, secretary; C. B. McGinness, treasurer, and E. T. Singer, John Worthy, M. B. Madden, P. G. Hale, and W. Johnson, members of the executive committee. The Cut-Stone Contractors' association selected F. V. Gindele, president; T. C. Diener, secretary and treasurer, and John Tomlinson, John Tait and Henry Fürst, trustees.

The Scoville Iron works, on South Clinton street, and the Diamond Prospecting Company, on North Clinton street, are manufacturers of quarry and quarrying machinery; Nichols & Co., Bruner & Lay, and William Klemm, are manufacturers of stone-cutters' tools; Blake Crusher Company, New Haven, Conn.; Clayton Air Compressed Works, Brooklyn, N. Y.; Gates Iron Works, Chicago; D. N. Jennings, 106 Liberty street, New York; Knoxville Car Wheel Company, Knoxville, Tenn.; James H. Lancaster, New York; Porter Manufacturing Company, Syracuse, N. Y.; Robinson-Rea Manufacturing Company, Pittsburgh, Penn.; Totten & Co., Pittsburgh, Penn., are manufacturers of stone crushers.

Artificial stone was used in Chicago prior to the fire, and a few of the large buildings of that period claimed it as constructive material. One who has examined into the comparative merits of natural and artificial stone for the various purposes to which they are applied, states that for many of those purposes well-made artificial stone, composed of granite, sand and hydraulic lime, Portland cement or blue lias cement, mixed in due proportion and formed into flagstone, ashlar, steps, copings, window-sills, and, indeed, all forms for which stone is used, molded or plain, is, beyond all comparison, the cheapest and best. Contrasted with ordinary flagstone, with its characteristic property of separating naturally in flakes or layers, artificial stone possesses the advantage of homogeneity—that is, a substance all of one kind throughout. In some well-known cases bridges in parks have been constructed of Portland cement, the result proving how lasting such material can be made when proper care and knowledge are used in proportioning and mixing the materials, but the artificial stone,

once so popular in Chicago, has ceased to occupy the attention of house-builders, for the pressedbrick and terra cotta of modern days meet all the demands of architects and contractors, except where the owner and architect desire a rock-faced stone to emphasize the character of a style.

The Chicago Composition Granite Company, founded in 1869, carried on their works at the foot of North avenue. The building stone produced was that used in the Burdick house, on Wabash avenue; the front and trimmings of the building on southwest corner of Wabash avenue and Adams street; the Goggin & Shaffner block, southeast corner of State and Adams streets; Dr. Dyche's, on the northwest corner State and Randolph streets; M. C. Stearn's, on Randolph street, and the Couch estate, 219 to 223 Lake street.

The Fréar Stone Manufacturing Company, established in 1868, employed fifty men in 1873, and produced \$100,000 worth of artificial stone. This was used in the Hale, the Staats Zeitung, the Bryant, the Grannis, the Phoenix, the Ward buildings and other structures erected before and after the fire.

The Chicago Artificial Stone Company began work in 1872, at 306 to 331 North Market street, and incorporated in 1873, with Charles Hoffman, president. The product was used in the Homan building, 172 Madison street; the Wrenn, 192 and 194 Washington street; the Glickauf, North Clark and Illinois streets; the Slosson, 82 State street, and in several other structures built before 1873.

The Ransome Artificial Stone Company was established at the foot of Pier street, on the lake shore, in 1872, and within the succeeding year supplied the stone for the Atlantic, on Van Buren and Sherman streets; Prout and Strong's building, on Clark street; Horton's building, on Lake avenue, near Douglas place, and a hotel building at Evansville, Ind. William B. May was superintendent in 1872-3.

The Schillingler artificial stone was first used in New York City in 1871. In September, 1872, a strip, 16x181 feet, was laid on the east side of the Chamber of Commerce of Chicago, at thirty-five cents a square foot; on Michigan avenue and Twenty-sixth street, also north of Eighteenth street; Prairie avenue and Thirty-first street; South Park avenue and Twenty-fourth street and other localities. J. D. Decreet, carried on the business here, and manufactured the stone on the very ground where it became the roadway or sidewalk.

The artificial stone works of Timothy Wright, on the lake front, at Pier street, were established in 1872-3.

The Portland Stone works, established in 1873, at 401 and 403 North avenue, by W. Gausden, supplied trimmings that year for Lincoln Park hall, Smith & Glade's brewery and St. Michael's church.

The Utica Cement Company's works, La Salle County, Ill., were established in 1869, within two miles of the older works of James Clark & Son. Henry Martin was president in 1873, with E. I. Wheeler, secretary and treasurer, and H. C. Freeman, superintendent.

Monier, a Frenchman, while on a visit to Paris in 1889 learned the secret of the manufacture of a new and cheap building material. In Paris he found many large structures

built of concrete mixture, of which volcanic sand is the chief ingredient. He spent much time familiarizing himself with the details of the French methods of manufacture, and on returning to the United States he set immediately about experimenting with the volcanic sands which exist in vast quantities in New Mexico. As a result, he displayed specimens of the stone which seem to bear out every claim for them as a building material. Four ingredients are used in its manufacture. Volcanic sand, lime and water are the known elements. The secret exists in the fourth ingredient, and in the proportion of materials used to produce the required result. The stuff is one-half lighter than stone, is turned out in molds, requires no burning, and can be manufactured as cheaply as bricks. It is claimed for it that it is more durable than sand, and the action of the weather has no effect on it. In appearance it is a chalky white, mottled like granite. It can also be made into hollow bricks, and laid soft in the walls between the molds and left to dry like concrete, when it becomes as solid as a stone wall.

The Strachan composition has been successfully used in late days for building purposes. The Granitoid Company, the Granolithic Company, the Portland Cement Paving Company, Schellenger Bros., Simpson Bros. and others are manufacturers of artificial stone; but the product of their yards is used in the construction of sidewalks rather than in the erection of buildings.

Mortar, in one form or another, has played a most important part in the beginnings of the homes, public buildings and monuments of ancient civilization. Egypt and Palestine tell of its use in the dim past; but to Roman civilization belongs the mortar age; for in the time of Vitruvius they mixed a silt or sand called puzzolana with lime, and produced a mortar that would harden even under water. The Roman Pantheon was constructed of this material and of rock. France followed Rome, and by degrees the lights of Roman and French knowledge were carried into Germany among the Aryans and to the Celts of Great Britain, and in 1796 Parker introduced, into the last named country, his Portland cement, a substance resembling, but not surpassing, the Roman cement of anti-Christian days. Prof. Fuchs, of Munich, in his essay of 1828, pointed out that this cement could be produced anywhere by the use of designated materials, and John Grant, availing himself of the knowledge, used the cement as described by Fuchs in the drainage works and river embankment at London, England. The preparation of cements and mortars is now the work of uneducated workmen, but the basis of the mixture, the true beginnings of practical mixing, required the exercise of science and art.

Samuel N. Davis, who died in 1848, burned lime on State street near Adams. Lansing Heil and Ried & Lewis were here in 1839. Lewis W. Stone, a lime-burner, was located on State and Polk streets in 1849.

The Illinois Stone & Lime Company was organized in December, 1853, and the same year developed the quarries at Lemont, then called Athens.

The Chicago Union Lime Works were begun in 1859 on a tract of land west of Ashland avenue near Nineteenth street, where the stone was quarried. In 1873 there were nine kilns

in operation, producing thirteen hundred barrels of lime per day. This industry employed two hundred men, and the value of output for the year was \$210,000.

In 1861 J. W. Williams established kilns on Harbine between Wood and Lincoln streets; in 1867 the Illinois Stone, Lime & Boring Company, John C. Evans, president, established kilns on Grand avenue near Western avenue, and six years later employed forty men; J. G. Blunt's kilns opened in 1869 at Western and Fourth avenues in 1873 and employed twenty-four men; H. Rice & Co. opened their works on Grand avenue near Western avenue in 1870. Their two large kilns produced fifty thousand barrels annually, while their quarry, in addition to stone for lime, yielded eighteen hundred cords of rubble stone.

Spencer & Co.'s lime works, at 71 Hawthorne avenue, date back to 1872, when eight men were employed and thirty-five thousand barrels produced from stone quarried near the artesian wells. Stearns & Co., who had extensive kilns at Bridgeport in 1873, claimed a large production.

The lime manufacturers and dealers of 1869 were A. R. Cook, Maxwell street near the river; C. R. Vandercook, 43 Market; the *Chicago Union Lime Company, with office in Wigwam building; Hallenbeck & Co., 113 West Lake, *William Kerr & Co., 96 West Lake; Lyman Bridges, 70 Washington street; A. J. Latham, 50 South Water; *Neely & Hayden, 234-240 South Water, and Whitacre & Raymond, 170 Washington street, only three of the above named firms, indicated thus *, are given in the directory of 1872; but the Star Lime Company, the Chicago & Lyons Company, the Monitor Company of Kelly's Island, Ohio; the Pewaukee Lime Company, the Illinois Stone, Lime & Boring Company, J. N. Smart & Co., Stearns & Co., Merchant & Holden, with several dealers, were represented here.

The lime manufacturers and dealers of 1879 were John A. Brugger, the Chicago Union Lime Company, Hadfield & Co., Marble Head Lime Company, Fort Washington Lime Company, Henry Rice, S. Sarl & Co., Stephen B. Scace, and Stearns & Co.

The Utica Cement association, F. A. Remington & Co., Pagenstecher, Haines & Co., J. J. Montague, and the Chicago Union lime works, were dealers in, or manufacturers of, cement in 1872.

The industry of manufacturing cement from slag, the use of which is becoming more and more general, was started from the desirability of utilizing the great quantity of residuary products that result from the refining of crude ore. As is well known, the metals in general, such as iron, for example, exist in the ore in more or less simple combinations (oxides, carbonates, etc.), but also mixed in variable proportions with earth or stone, which constitutes what is technically known as gangue. By itself this is infusible at the temperature reached in the treatment of the ore; but in order to get rid of it, it is mixed with certain calcareous substances, when it easily fuses, and this result is the slag. It is evident that all slags have not the same composition, since the stone and the minerals added to it are not always the same. They may be divided, in fact, into three groups, according to their composition, but in a general way, the only one that can be successfully employed in the making of cement are the double silicates of lime and aluminum. The two characteristic properties of the slag



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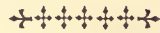
cements are: First, its slowness of setting; second, its small specific gravity. The time required for setting is about fifteen hours, but this slowness has the advantage of allowing the use of slag cement without all the precautions necessary with cement that sets very rapidly. It has, however, one drawback to its employment in countries where the winters are very cold; namely, it must not be frozen before it has set. Experiments made at the government laboratories at Berlin gave unfavorable results in this respect. The samples exposed to a very low temperature during the setting showed (twenty-eight days after) a very inferior strength to those that had set where the temperature was normal. The small specific gravity is an objection in case where the cement is to be run in a liquid or semi-liquid state into molds, since, being lighter than sand, the various compounds of the cement separate.

In 1868 Chicago was the lime center for a very large area, and pioneers of the trade incline to the opinion that more lime was sold outside the city then than at present. The facilities for production in 1868 were crude, at least, and the demand for lime large, owing to the rapid development of the northern counties of the State. Chicago commanded the trade, but within a decade, stern competitors entered the field, and every new settlement in the vicinity of a limestone deposit claimed a lime kiln. This effected the market price materially, and in 1877 the fifty-cents-per-barrel rate pointed out the benefits to the people of unlimited competition. In 1887 the price, sixty cents per barrel, though showing an advance of ten cents on that of 1877, was less profitable to the producers, for the price of labor was fifty per cent higher.

The lime manufacturers and dealers in the city at the beginning of 1891 were the Artesian Stone & Lime Manufacturing Company, Charles C. Bishop & Co., Chicago Union Lime Works, Cook & Brown Lime Company, John Donecker, N. J. Druecker, James Farrell & Co., John Griffin, Gwathmey, Garvin & Co., Hadfield & Co., Marblehead Lime Company, Mayville Lime Company, H. Rice & Son, W. O. Seace & Co., F. Schultz, George N. Starr, Stearns Lime & Stone Company and George B. Wright.

Early in 1891 the following named granite producers of the West and Southwest assembled at Chicago to organize a national association of granite quarry owners: The Syenite Granite Company, Graniteville, Mo.; Berlin & Montello Granite Company, Wisconsin; J. H. Anderson Granite Company, Maine and Wisconsin; J. M. Pourborn Granite Company, Pipestone, Minn.; Northern Granite Company, St. Cloud, Minn.; Matt Breen Stone Works, St. Cloud, Minn.; Amberg Granite Company, Wisconsin; Southern Granite Company, Atlanta, Ga.; Mount Eyrie Granite Company, South Carolina; Texas Capital Granite Company, Texas; Maine Red Granite Company; Blue Mountain Granite Company, of Vermont; Maine & New Hampshire Granite Company; Norway Granite Company, of Maine; North Sioux Falls Stone Company, of South Dakota; Minnehaha Granite Company, of St. Cloud, Minn.; Sioux Falls Granite Company, of Iowa, and a dozen smaller companies. The object of this organization was to equalize the price of labor, so that the western quarrymen paying \$3.73 per day for labor would be able to compete with the quarry owner of Maine, who paid only \$2.75 per day.

CHAPTER XX.



PIERS, FOUNDATIONS, WINTER BUILDING, ETC.

VERY many references to foundation work have necessarily crept into the chapters devoted to descriptions of the city's great buildings, but many more must be given, as the subject is a most important one. Here the reasoning of men, who have given such work practical study, is used, and a few of them quoted. Baumann, Jenney, Sullivan, Root and Adler have each contributed most valuable information on the subject; while the paper of Harry Lawrie, written in 1885, when foundation work assumed great importance, is not the least addition to the literature of the building arts.

A few historical points connected with foundation work in Chicago were suggested by the late John W. Root in 1886. He claimed that light piers should be correspondingly lightly based, bases of heavy piers strengthened, and the light piers made able to resist the upsetting wave caused by the downward motion of large piers, the weight apportioned to the light piers not coming upon them until the heavy piers are weighted. Inside piers should settle more than outside walls, in order to bring the thrust of the walls inward. Steel rails have been used for piers through necessity, as in large buildings the basement is almost as valuable as the first floor, and piers of heavy stone would occupy too much space. The foundations for the Montauk building were the first in Chicago to call for pier material other than dimension stone, and hence the steel rail was brought into use as a permanent foundation material for the first time. A heavy layer of concrete was placed on the blue clay and made perfectly level. On this layer the steel rails were placed and then covered with another heavy layer of concrete. This system was carried on until a number of pyramids marked the foundations on which that pioneer of great-brick buildings was to be raised. On the top of the pyramid the plate is placed and on this plate the columns designed to carry all above, so that the piers in the basement do not occupy more space than those on the first floor, and the concrete and iron base do not cost much more than half the price of dimension stone.

The settlement of buildings is not always in proportion to weight. With from one to two thousand pounds per square foot the settlement is scarcely observable; with three thousand pounds one or two inches may show; with six thousand pounds, as in the Cook county

courthouse, the settlement is variable, in some places showing twelve inches. D. Adler stated in 1886, that, in some of the buildings designed by Adler & Sullivan, seven thousand pounds to the square foot showed a settlement of three inches, while in the Board of Trade building, a weight of nine thousand pounds per square foot occasioned different depressions, showing six and one-half inches between the least and greatest settlement. The Federal building, however, is the great teacher of the requirements of foundation work in Chicago. Its teaching term will only end with its removal, for since its erection its settlement has continued day and night. The want of a proper study of the clay stratum, aided probably, by carelessness in foundation work, has undoubtedly given to the architects and builders of Chicago this expensive object lesson. Ignorance of the fact that about two thousand pounds per square foot is the carrying capacity of Chicago soil, created dissatisfaction and distrust, which the present is only remedying.

When the Central building, on Market street, was about completed in the fall of 1871, the foundations were found to be wanting in many respects and the structure began to settle. To repair the mischief delays and expenditures were necessary.

A paper read before the Architectural Sketch club, December 21, 1885, by Harry Lawrie, treats concisely the subject of foundations in Chicago and, in fact, of foundations resting on compressible soil in every locality. In his consideration of this subject, he confines his reasoning to the successful construction of great buildings and demands the application of two recognized principles:

“(1) Resolve the building into isolated piers on the ground or basement floor, and give to each its proper proportion of foundation, commensurate with the weight carried, that is to say, the areas of the foundations must be in exact proportion to the load carried thereon. (2) The load carried by the foundations to be placed centrally thereon, the center of gravity of the pier coinciding with the center of the foundation. In the first principle mentioned, the subdivision into isolated piers may be somewhat difficult, more especially where piers and high walls, such as “party walls” abut, or where vaults are in close proximity to, or abutting, the main piers of the building. Such cases can only be dealt with upon the principles laid down and applied, to the best of the architect’s ability to deal with such points.

“Having resolved our building into isolated piers, the second principle is applied. Suppose, as a *reductio ad absurdum*, that the load is not placed centrally on the foundation, the natural result would be that, owing to the compressible nature of the soil, the base would assume an inclined plane, the depression being toward the end, where the load was put, and the axis thrust out of its perpendicular line, for it must retain its original angle with the base, and will assume such a position as represented by Figure 2, the dotted lines showing original position of foundation and load. We will suppose a store front with heavy piers at A and B (Figure 4), and a lighter intermediate pier at C, with a continuous footing under the whole, in order to get all the strength we can. The inevitable result would be that the heavy piers A and B would so depress the compressible soil that the foundations would form a convex curve, while the foundations would rupture at points E; the lintels and beams, if of stone, would

crack; the mullion, or pier C, might bend or be forced out of its perpendicular line and a variety of mishaps might occur, all of which would be injurious to the building. If the footings under the piers A, B and C had been isolated, and made proportionate to the loads carried, as shown by dotted lines (Figure 3), the settlement would have been equal, and no such trouble as above stated would have occurred.

“Take another example (Figure 5), with a continuous footing under the buildings and inverted arches placed between piers A and B to carry intermediate and lighter pier C, these inverted arches being ostensibly inserted for the purpose of spreading the load on the continuous footing. The results are the same as before mentioned, namely, a greater depression where the heavy piers occur than at the lighter ones, a rupture in the continuous footing, a breaking and cracking of girders and lintels, etc. (Figure 6). But the same remedy can be applied, namely, an isolated foundation to each pier properly proportioned. Take another example (Figure 7), where arches are thrown from one pier to another in order to support part of the superstructure. The outward thrust of the arch A will have a tendency to displace the center of gravity of pier B and destroy its verticality. In all the above examples, the direct tendency of the continuous footing is to add something more to one side of the foundation under the pier, and therefore violate the second principle, causing the center of gravity of the pier to be different from the center of the footing.

“A flagrant example of the continuous style of footing is illustrated by the Postoffice, under which is a bed of concrete covering the whole site of the building (Figure 8), the idea being evidently to use it as an equalizer. Instead of such, it has acted in a most direct way as a very destructive element. The heavy outside piers of masonry have a depressing effect upon the outside edges of this mass of concrete, greater than that caused by the interior, or lighter piers carrying the floors, etc., the direct result being a spreading of the building toward the top (Figure 9), causing cracks in foundations, lintels and stone work generally, humps in floors and a general displacement of levels. Apart from the danger to the building from this method of continuous footing, the question of economy arises, and plays a most important part in the building of to-day. We have to arrive at a maximum strength, at a minimum expenditure. By using the isolated pier principle, not only do we get a perfect foundation, or nearly so, compared with the others, but we do so at a greatly reduced cost, for we effect a saving by dispensing with all unnecessary material.

“It is a simple question to determine the exact weight of solid masonry that comes on any given footing, but it is a somewhat difficult problem to lay down hard and fast figures for the weight per square foot of floorage carried by such footing. The load of solid material is a known quantity since we know the weights of the various materials supported by the footing, but when we begin to make our calculations for weights on floors we at once deal to a certain extent, with a theoretic load—to a certain extent be it observed, for we know the exact weight of the floor construction, but beyond that point the figures are purely theoretical. Our floor-beams and girders are calculated to sustain say one hundred and twenty to one hundred and thirty pounds per square foot. If we were to allow for the whole of this weight

the less compressible, will, by the weight of the outside wall, or piers, be forced up in the interior of the building, forming a convex curve, the exact nature and extent of which can only be theorized upon, but this convexity will certainly form an element of danger to the lighter interior piers by thrusting them upward, if we may so express it. This upward tendency will therefore require to be counteracted, and that can only be accomplished by reducing the area of the footing, or, in other words, employing a larger factor for the load per square foot of foundation. This reduction varies in different parts of the city, and can only be determined by experience and experiment—experience being the better school.

“Where interior piers or iron columns support floor loads and nothing else, that allowance will require to be greater, since we have seen that all the floors will, in all likelihood, never be loaded to their full capacity at one and the same time. In some cases, an allowance, that is, a deduction, of twelve per cent on the area of foundation is made. The tendency of all outside walls and piers is to have an outward thrust, owing to the weight of the floors upon them, and in order to counteract such thrust an addition to the outside edge of their footings should be made (Figure 10). In actual practice this allowance differs considerably, but as much as ten per cent additional to the footing has been made, say in a heavy building such as in one of eight or ten stories high. This will have a tendency to throw the pier off its center of gravity in an inward direction, but there is no fear of collapse, since we have the strength of the floor beams and girders to counteract any thrust.

“It is difficult to determine the exact weight per square foot to be placed on the foundations. In some cases two tons per square foot have shown a depression of from three to seven inches. One and three-fourths tons per square foot would be a safe load on ordinary Chicago soil, and would probably give a depression of from two to four inches. The exact factor to be used should be determined, if possible, by the results of the borings through the clay, and if this result can not be obtained before the building is ready for erection, a safe factor, say 1.60 or 1.75 should be employed. The materials used in foundations are various. Brickwork ought to be used in foundation piers with great care, selecting the best hard-burned and well-shaped bricks, building them in cement. Such brickwork will bear from six to eight tons per square foot with safety, and in some cases as high as ten tons per square foot. The great trouble with brick footings is their liability to crush under a great load, and, unless the footings are so proportioned as to receive a load of say six to eight tons per square foot, another and stronger material had better be employed. Brick in cement will crush at from four hundred and fifty pounds to one thousand pounds per square inch, and, allowing a factor of safety of six, which is low, would give in tons five to twelve.

“Rubble work, well built and squared at the points, in large stones, forms an excellent footing built in cement; such mason work will safely sustain a load of from twelve to fifteen tons per square foot. Dimension stone is an expensive item, and, except under exceptional circumstances, should only be used in bond courses. The offsets on these foundations should be carefully studied. Those in brick work should be about three-fourths to one inch per brick for heavy footings. In rubble work, with courses of about fourteen to eighteen inches high,

offsets of from six to ten inches are sufficient, and in dimension stone, say one foot and two inches high, the offset can be twelve inches. Concrete should only be used as an equalizer, and placed at the bottom of foundations. The load which can safely be put upon it is about four to six tons per square foot. In building footings, they are sometimes constructed with a hollow space, to allow the masonry to dry out, and to prevent cracks from unequal drying, but care should be taken to see that the area of the mason work is of the required amount. Footings are sometimes connected by wooden beams (Figure 11), but this method of construction should be used with great care, as it has a tendency to displace the center of gravity (Figure 12), of the pier and violate the second principle laid down.

“In order to get greater projection of footing, or more bearing area, and that projection required to be had in a height that would be too great for ordinary offsets, iron rails or beams are sometimes used. The strength of these beams or rails can be calculated on the basis of a beam, supported at one end with a distributed load. With such a mode of construction, the rails should be laid on a bed of concrete, from twelve to eighteen inches thick, as an equalizer, and covered on top with cement. Such a mode of construction has the advantage of giving greater space in the subbasement.

“In ordinary circumstances anchors, or tie-beams, are unnecessary to the stability of piers. The piers should be so designed that they will have a distinct and independent strength, and not dependent on each other for lateral support. It may be that tie-rods are necessary to brace two parts of a building together, but this should not occur in a new building with independent walls, but may be in a new building, adjoining an old one, where the walls have to be braced for various reasons, best determined when the case is before us. Except under exceptional circumstances, piling in Chicago is an unnecessary and often a dangerous method of making a foundation, when we remember that below the blue clay we have about fifty feet of blue muck, which is incapable of sustaining the piles to any considerable extent.

“On ordinary ground, away from the river, piling is unnecessary, from the fact that we have shown that foundations can be laid on top of the blue clay that will support the superstructure. If we conclude that piling is necessary, great care must be taken that a hard bottom is reached before the foundation is placed on top of the piles. This can only be got by driving through the clay and blue muck to the hard bottom below both, in all a depth of about fifty feet, involving very considerable cost and time in the construction thereof. It is supposed that by piling a given area, greater bearing surface can be got, hence, greater stability. In some places this is the case, but not in Chicago, unless we go down to the great depth already stated. By piling a given area and placing the piles as close as convenient, say one foot apart, we at once reduce the bearing surface of the clay by just the area of the piles, and, supposing that the piles are driven through the clay and some feet into the blue muck (as in Fig. 13), we supply in place of the original clay surface a new bearing area equal to the area of the piles and resting on a highly-compressible substance, the result being that when the load is put on, the whole foundation must inevitably sink, to the detriment of the building, resulting perhaps in cracks in walls, falling of floors, and other mishaps more or

less disastrous. Where piling is necessary is at the river bank, where water so percolates the soil as to render it highly compressible and spongy, and successful piling can only be got by following closely the conditions mentioned, namely, by driving to the hard bottom to whatever depth that may be.

“The Campanile tower of St. Marks, Venice, is a notable and almost successful example of an isolated pier, being built on a highly compressible soil. We have it in the *American Architect*, of August 29, by Mr. Blackall, who examined the foundation, “that the total weight of the tower in round numbers is thirteen thousand tons, whence the distributed load on the piling is somewhat over six tons per square foot, a load which would cause modern engineers to hesitate a long time before putting upon piles which are simply driven into the clay. The foundations, have, however, stood the test of several centuries without yielding an inch, and one of the most valuable results of the investigation has been to fix a maximum of load which can safely be borne under such conditions. It is an interesting question how much the piles really support, for, as previously explained, they have no solid bearing, and, according to the manner, in which piles are usually driven in Venice, could not be relied upon for such a load as six tons per square foot.”

The Tacoma foundations were constructed according to the lights of three years ago. About the first of June, 1888, the buildings on the lot at the northeast corner of La Salle and Madison streets, were removed and the ground excavated to the uniform level of about thirteen feet below the surface of sidewalk, at which point the firm blue clay of this district was found. As the Tacoma at that time was one of the highest buildings and the construction was new, great care was taken with the foundations. Holes fifty feet deep were bored in various places over the entire foundation and the substrata carefully examined. It was found that there was a sheet of clay about four feet thick, which was firm and hard, and under this was a sheet of clay about forty-five feet thick, that was very soft. It was, therefore, determined to place the bottom of foundations on top of the hard clay. Considering the nature of the soil, an allowance of three inches was made for permanent settlement of the entire building. Before putting in the piers of each column and wall, holes were bored to the depth of twelve to twenty feet under each pier, so as to guard against any possible pockets or defective foundations. One pocket containing soft clay was found, and this pocket was excavated and filled with concrete before proceeding with the work. The foundations consist of a sheet of Portland cement concrete, about twenty inches thick, on which rest I-beams of various sizes, from twelve inches to twenty inches deep. The concrete is filled in between the beams and all beams thoroughly coated with Portland cement concrete. The foundations are based on the pier theory, the weights of the various portions of floors and superstructure being carried down to the columns, and the foundations for these columns being isolated. The north wall of the building is a line wall and joins a line wall of the building north. The foundations of the Tacoma building extend under this adjoining wall, a distance of nine or ten feet, and the wall is supported on these foundations. To avoid danger of disturbing the adjoining building by settlement, this adjoining wall was placed upon house

movers' screws and periodically raised as the Tacoma wall went down, so as to maintain perfect levels in the adjoining building.

It has been for a long time claimed that the soil of the down-town district in Chicago would not sustain the immense weight that was being piled upon it in the shape of twelve to twenty-story buildings. This soil, under a thin layer of surface dirt, consists of a stratum of from three to six feet of hard-pan or blue clay, then four feet of soft mud, another six feet or so of clay, and so on. It is this layer of mud which is under suspicion. George Tapper, speaking in September, 1890, says in only one instance has he run across a foundation where the first layer was less than three feet in thickness. All the large structures have been built on one of two sorts of foundation. The one most commonly used up to within five or six years was to drive piles down through the mud and clay, level them off on top and build up big stone columns. The second plan was that of covering the surface of the ground with a solid bed of concrete and railway iron and building directly on it. But this has grown in disfavor since its lamentable failure under the Postoffice. Now the pile foundations are under suspicion. The theory of builders is that the driving of the piles into the earth breaks up its homogeneity, or in other words loosens it, and thus largely destroys its weight-resisting power. The water from the strata of mud also not only rots the piles, but when they are driven down some of the water is forced up through the upper layer of clay and weakens it. Nearly all the large buildings resting on pile foundations are, it is asserted, sinking very perceptibly. The first, and most noticeable, is the Postoffice. The second is the county building, the bad condition of which is apparent. The City hall, which adjoins it, on the same kind of soil, and of about the same weight and size, is built on a concrete foundation and has not settled perceptibly. The Board of Trade is not as level as it should be by some inches. But worst of all was the fact that the great Auditorium began to settle.

The owners are not going to talk about such things if they can help it, and the historian must depend upon his eyes and such information as kindly-disposed architects will give him. In the present case it is safe to say that both of these authorities sustain the late reports about the Auditorium. Many of the floors in the building are already out of plumb and there are other plain evidences that the big building is settling, and not all over alike, either. It will be remembered that when the Auditorium was first erected the immense pressure on the foundation walls against the handsome new Studebaker building, on Michigan avenue, weakened the latter so that the south end dropped down a number of inches—so much so that it was plainly "out of true," even to the inexperienced passer-by. In speaking frankly about this matter Mr. Tapper said: "I understand that the walls (of the Auditorium) are sinking again to a considerable extent. Further than this I cannot state, except to say that the foundations were put in originally for a brick and not for a stone building." All the large buildings constructed on the concrete-and-iron foundations seem to be in good condition. The Rookery, the Pullman, the Insurance exchange, the Bank of Commerce, the Montauk, the Chicago Opera house and dozens of others are all right. In the building of the great Masonic Temple assurance is made doubly sure by not only using the concrete-and-iron

foundation, but by testing the weight-resisting power of the soil on General Sooy Smith's plan. This is an interesting process, and is now in use. A pile is driven deep down into the earth and on top of it a huge tank is secured. Gauges are arranged on the side of the pile and then water is pumped into the tank. The gauges show just how far the pile sinks.

The most terse and comprehensive paper presented on foundation work in this city is that which appeared in the *Economist* from the pen of Dankmar Adler, dated June 25, 1891. He says: "In your last issue I expressed the opinion that the methods of foundation construction now in general use in this city were, though extremely ingenious, far from ideal perfection, and entirely insufficient for the ultimate development of the requirements of the tallest business buildings. I shall endeavor in the following to show upon what lines we should work to secure more satisfactory results, and in this connection give a historic review of the development of foundation construction as practiced in Chicago.

"Of all the buildings erected in this city there is not one the foundations of which are subjected to severer strains than the grain elevators. To-day there may be piled in every bin fifty, seventy-five or one hundred feet high of grain; to-morrow this load may be entirely discharged from one or more bins or tiers of bins, while others retain their full load. These changes are continually recurring. In loading the bins no attention whatever is paid to variations of strain upon the structure, and the experience of all of the better grainhouses has shown that the methods adopted for their construction are sound, and that their foundations are practically incompressible; that there may be upon one set of foundation piers a line of bins full to the top with grain, adjoining them a line of bins without any load, and still no movement of foundations responds to these enormous variations of load. In other words, the method adopted for the construction of elevator foundations does not show that sensitiveness to increase or diminution of load that is exhibited by the foundations of our business buildings; and yet the loads per square foot of soil under the building are as great as in the highest of our business buildings, and the soil, in most instances, is the most treacherous to be found in Chicago, and there exists, in addition to the extreme variability of dead load, a further disturbing element in the tendency to vibration produced by the heavy and powerful machinery employed in the handling of the grain.

"All of these structures stand on pile foundations, the length of the piles varying with the character of the soil, and the height of the column of grain to be carried from twenty-five feet long to fifty, or even, in a few instances, sixty feet long. As far as I have been able to learn, the average load per pile is about twenty tons.

"It may be asked why, when so striking an example of absolute reliability of foundation construction has been before us for so many years, we have strayed away from this, and have adopted other methods, which, no matter how ingenious, have always been open to the objections already stated. It is not at all flattering to Mr. Burling, to the late Mr. Edward Baumann, to myself, who all have had charge of the design and construction of grain elevators and buildings along the river front, nor to the others of the older architects of this city, who have been similarly employed, that we failed to apply the lessons there learned to the use of

our clients, who have since then placed us in charge of the erection of business buildings. When I look back upon my connection with the development of foundation construction in the city of Chicago, I find it difficult to determine by what combination of mental processes my attention was diverted from the true solution of a difficult problem, which was already in my grasp many years ago. Perhaps had I, or had the others who were connected with the erection of grain elevators, been called directly from the design of one of these to the design of a modern 'skyscraper,' we should not have fallen into the error of forgetfulness of a good work already accomplished. But the building of elevators gradually drifted out of the hands of architects in general practice into those of a few specialists, while we, the architects in general practice, before attempting the erection of ten, twelve and twenty-story buildings, went through a probationary period, in which we were called upon to design buildings from four to six, or at the utmost, seven stories in height. In connection with all of these, contentment with the compressible condition of our soil and the general application of the principle of isolated pier construction seemed justifiable. Careful computation of weights to be sustained, and the allowance of but comparatively small loads per unit of foundation area made it possible to secure settlement and movements of structure so slight and so uniform that we lost sight of the desirability for securing an approximation to a rigid, unyielding substructure. The younger architects, who followed in our footsteps in the erection of stores and warehouses, and who began simultaneously with us to wrestle with the problem of how best to construct the modern 'skyscraper,' are not to be blamed if, instead of studying the history of our older works (neglected by ourselves), they assumed that our theory of foundation construction, as they found it, was the best that could be used, and then applied themselves with extraordinary intelligence, vigor and enthusiasm to the development, upon the basis of this theory of an improved system in the practice of foundation construction, adapted to the newly developed wants.

"At about the time when these younger architects were at the most impressionable period of their career, when, with but little work in their own offices, they had nothing to do but watch closely the work that was being done by others, there came two unsuccessful efforts at building construction, both upon the right lines as to theory, but so far astray as to practice as to create a prejudice against pile foundations and against monolithic foundations which still exists, and which undoubtedly did its share toward influencing those who ought to have known better and ought to have been above unfounded prejudice. The first of these was the Cook county courthouse, which is built upon a pile foundation. It was almost the maiden effort of its architect, who, however much engineering ability he has shown in his subsequent work, had at the time of designing the county building hardly emerged from the condition of the tyro. The result of the treatment of the foundation adopted here was in the highest degree disappointing and troublesome. I understand that irregularities of settlement of as much as eighteen inches took place. But this was not due to the use of piles in the foundation, but to their injudicious application. The counterpart of the Cook county courthouse—the Chicago City hall—was erected upon a concrete, not a pile foundation, and here also

there were variations of settlement of different parts of the structure, which I have been told by parties who were in charge of the work amounted to as much as fourteen inches. But the irregularities of settlement of the foundations of the Cook county courthouse had become widely known through statements and comments of the press, and instead of being ascribed to the improper design and perhaps still more improper execution of the design of these pile foundations, the general fact that pile foundations had been used was seized upon as the sole reason for the great and irregular settlement of the foundation. No effort was made to ascertain why, if under the much more trying conditions attending the use of pile foundations under grain elevators the results were all that could be wished for, equally satisfactory results could not have been obtained by the application of the same principle in the construction of the Cook county courthouse.

“Shortly after this experience came the construction of the foundations of the United States Government building in this city. Here Mr. Mullet attempted to supply upon our yielding and irregularly compressible soil the equivalent of a rock foundation. It was a happy inspiration, and had it been intelligently and consistently carried out would have been a most valuable contribution to the development of foundation construction in this city. But he evidently had not calculated how great were the transverse strains to be resisted by the concrete which was intended to serve as a continuous rock foundation. Here was a bed of concrete only three feet thick, made of inferior cement, without the introduction of any substance calculated to supply the lacking transverse strength, and the result was, as might have been foreseen, an ignominious failure. Had Mr. Mullet used high-grade imported Portland cement for this concrete, had he made the layer six feet instead of three feet thick, had he introduced railroad bars, iron or steel I-beams, or even the twisted rods peculiar to the Ransome system, he would have had under his entire structure a continuous mass of material so hard and possessed of so great a degree of transverse strength that none of the strains coming upon it could possibly have affected it. Simultaneous with the failure of this foundation came the pamphlet of Mr. Frederick Baumann, in which he so ably presented the theory and practice of the system of isolated pier construction as applied to the erection of buildings upon compressible soil. So forcible and convincing was the line of argument pursued by Mr. Baumann, so ignominious had been the failure of the effort to construct a layer of incompressible and unbreakable rock under the Government building, so unsatisfactory had been the experience made with pile foundations under the Cook county courthouse, that the entire profession was carried away by the masterly and lucid presentation of the arguments advanced in Mr. Baumann's pamphlet, which has become a classic in the literature of architecture and which has been, in almost every instance, the guide of the constructors of Chicago in all of their works.

“Indications of progress toward the development of what must become the final practice were made at different times by different architects. The first were in the nature of improvements in the practice of applying the theory of isolated pier foundations; and but slowly, reluctantly and almost under compulsion came developments of new principles. The sub-

stitution for sharp and high pyramids of dimension stone, of flat and shallow pyramids of Portland cement concrete, given tensile and transverse strength by the introduction of railroad bars and I-beams, was begun in a tentative way in the Montauk block and still further in the Phenix, Fair, Masonic Temple, Rookery, Tacoma, Manhattan, Monadnock, Auditorium, Owings and many other buildings. It has banished entirely the use of dimension stone for the lower courses of the foundations of very heavy buildings. The introduction of the cantilever as an agency for carrying the weight of portions of structure next to existing walls and piers upon foundations lying alongside of these was begun almost simultaneously in the Auditorium building and the Chicago Edison Company's buildings on Adams street. In the former its application was on a small scale and to comparatively unimportant parts of the structure. In the latter it was in connection with the main walls of the building, but as they were not carried to their full height, the application of the cantilever system in their foundations has not excited the attention which would otherwise have been given. Following these came, on a grand scale, the use of the cantilever system in the foundations of the party-walls of the Rand-McNally building, the Chemical bank building and the Herald building, and perhaps some others.

“Another development came in the case of the Auditorium tower, which has a foundation six thousand seven hundred square feet in area, composed of two layers of twelve-inch timbers and five feet of concrete interspersed with three layers of railroad bars, two layers of ten-inch I-beams and one layer of fifteen-inch I-beams, which foundation was designed as a unit under compulsion, because it was found that the lines of pressure of the different parts of the tower intersected each other in so many places that it became impossible to give individual loads to individual foundations, making it necessary to treat the entire tower as a single pier or stack resting upon a united foundation. The foundation of the Owings building, which also is an undivided mass of concrete to which transverse strength has been given by the introduction of several layers of railroad bars, probably owes its origin as a monolith to the advice of Gen. William Sooy Smith, who, I believe, acted as consulting engineer. In connection with the Auditorium building, where his advice, in connection with many items of construction, was of the utmost value, he suggested in several places such tying together of individual isolated piers as to make them bear together under possible irregularities of load, which fact is my justification for entertaining the presumption, before stated, as to his influence upon the design of the foundations of the Owings building.

“And now at last comes the reintroduction in connection with the tall modern building of the long neglected and undervalued pile foundation. The passenger station of the Northern Pacific railway, on Harrison street, is built entirely on a pile foundation. The weights of some parts of the structure are enormous. The variations from great to small loads in the adjacent parts of the structure are frequent and quite remarkable. The triumphant solution of an extremely difficult problem was found in the use of piles carefully adjusted to the weight to be carried, in the determination of distance apart and length of the piles. As an instance of the remarkable success here attained, I will cite the corner tower, which is carried

on piles fifty feet long, each loaded with twenty-five tons, and carrying this load with absolutely no perceptible settlement. I am not at all prepared to say that even this is the last phase of development in the design of foundations for tall buildings. I have endeavored myself to go a step further in the design of the foundations of the new German theater, on Randolph street. Here is a building the different parts of which range from a height of four stories for certain small portions of the structure to thirteen stories for the greater part of the same and from this to seventeen stories for the tower. How great are the concentrations of load may be deduced from the fact that the greater part of the revenue-bearing portion of the building is carried above the theater and its stage, on steel trusses; and that there are individual trusses carrying a load of fully three hundred tons each. Borings made upon the ground show that the characteristic soft Chicago mud attains a depth here of from forty-two to forty-eight feet below the cellar floor, and that below this is found the well-known tunnel clay, so hard that it was impossible to bore through it with the ordinary boring tool used. Fifty-foot piles were driven through this soft mud until, as in the case of the Northern Pacific station, their points strike the tunnel clay. Here they were merely given a sufficient number of blows to make sure that the points had penetrated the hard clay. Attempts at further driving would be useless, as experience has shown that in such cases the points of the piles are simply battered into fiber, but make no appreciable penetration. The heads of these piles are cut off at a uniform level of about three feet below sewer level or water line, and are then covered by a grillage of oak timbers running crosswise of each other and both layers drift-bolted into the heads of the piles. Upon this is formed a foundation of concrete and I-beams, of which the outer parts act as cantilevers for carrying the parts of the new enclosing wall, which are erected in immediate contact with the old party walls of the adjacent buildings. It will be noted that by this means there is obtained an unyielding substructure for the foundations; that, second, in the design of the foundations there has been applied in combination every principle used in the most advanced buildings thus far erected in this city. The pile foundations serve in turn as direct support, as fulcrum for foundation cantilevers, as the support of foundation girders, adapted in each case to the peculiarities of the situation. The building when erected will be, although in immediate contact with neighboring properties, entirely self-contained and entirely independent of the adjacent buildings. No matter if the adjacent buildings are carried up to a height of twenty or thirty or more stories, the additional loading of the adjacent soil can not effect the pile foundations which extend to the hard, almost incompressible, substratum upon which the softer surface soil of Chicago rests.

“This combination of principles may be continued to a considerable extent. Suppose, for instance, in the case of this particular building, the surface of the entire lot had been covered with piles of the same length, that upon these a continuous foundation, a monolith of concrete strengthened by steel beams and girders acting in some instances as cantilevers, in others as girders, had been formed in such manner that the loads on any part of the substructure would have been redistributed through this girder and cantilever construction of steel and

concrete over the entire area of the foundation. Then, instead of seven hundred piles, the number acquired to carry the present structure, there would have been available one thousand seven hundred piles, or enough to carry almost two-and-one-half times the load, or the equivalent of a building covering the lot, averaging thirty stories in height. If in making this assumption I am theorizing, my theory is one that is based upon the actual experience of existing buildings. First, as to the pile substructure, I conceive it to be at least as well constructed and to be loaded no more heavily than that successfully used under the Northern Pacific depot. Second, as to the transmission of loads over large areas by means of steel beams and girders imbedded in concrete, I am assuming nothing that has not already been done in completed buildings, such as the Rand-McNally, the Auditorium, the Tacoma, the Rookery, the Monadnock, the Manhattan and others. I am merely proposing that we amend our theory and practice until we shall have embodied in the same all the lessons learned, all the problems solved, in our best work. While, from what I have here stated it might seem as though thirty stories were the limit of practicable height with the foundation construction proposed, I am inclined to the belief that further study of the problem will reveal possibilities of the attainment of still greater height. There are, however, other considerations besides the limitations of bearing capacity of soil and foundations that limit the perpendicular development of the business building of Chicago. I shall endeavor in a future letter to place before your readers some of the conclusions arrived at in my study of this problem and in my observation of the brilliant and effective work of my professional colleagues."

A peculiar system of foundation work was introduced at Kansas City in 1890, on the site of the present City hall. A deep ravine marked part of the site a few years ago, and the heavy clay bank of the ravine the other part. The deep part was used as a public dump, and over the accumulated rubbish was cast the clay from the neighboring bluffs. To erect a large, heavy house on land made in this manner required some study. To sink piles in the dry filling would be useless, as dry-rot would seize the timber and the excavation of deep trenches was out of the question as it would endanger the adjoining buildings. The architect concluded that a system of piers for the whole substructure would solve the problem, but to dig square holes or pits and crib the excavation would not only be laborious but expensive and dangerous. The cylindrical form of piers was finally adopted, and of uniform size, so that the excavation could be done with a large auger operated by steam power, and a three-sixteenth inch caisson could be made to follow the auger. This much being decided upon, the question of material was taken up. Concrete was the first to suggest itself, but upon mature deliberation and investigation vitrified bricks were adopted as the materials best suited for the filling of the caissons. These bricks, singly, in a testing machine, withstood a pressure of one hundred and thirty-five to one hundred and forty tons before being fractured. The piers, four feet six inches in diameter, laid in hydraulic cement mortar, and grouted solid in each course, and well bounded in all directions across the pier, proved to be all, for solidity, tenacity and great strength, that the most sanguine expectations had hoped for. The piers are sunk to rockbed of oolite limestone about eight feet in thickness and are capped with cast-iron

webbed plates, on which rest steel I-beams all bolted together with standard connections and separators, and the interstices between the beams and the excavation of one foot each side, and one foot under the beams and caps are filled with concrete. The upper surface is capped with boiler plate, one-fourth inch thick, bolted to flanges of beams. On this surface the walls of the building are started. The piers under the north wing, tower and smoke stack, and on each side of the main structure, having excessive weight in addition to the ordinary loads imposed on them, are reinforced by twelve-inch Z-bar columns, which also rest on the rock bottom. The whole system, in essence, is the direct transmission of the entire weight of the solid bed rock by so arranging the interior construction that the whole weight is subdivided, each subdivision being carried by an isolated pier, capable of carrying its own individual load. By making these piers of uniform size the load superimposed on each is made about equal by locating them at a greater or less distance apart, as the total weight of the structure is figured in its entirety and this subdivided into loads corresponding to the number of piers required, these being transmitted to walls and isolated columns by the system of steel I-beams at each floor, thence to the I-beams resting on webbed cast-iron plates, and thence to the isolated piers and rock bottom.

Such a system may never be necessary here, but it is given as the conception of a Chicago architect, and may have to be accepted by Chicago builders in cities where their enterprise may bring them work in the future.

A new method of supporting walls without screws or needles was introduced in 1887, by Frederick Baumann, a Chicago architect. It was necessary to remove the dividing wall between two store-rooms, leaving the wall intact from the first ceiling upward. He proposed to convert the two rooms into one, by making nine openings in the wall line of one hundred and twenty-six feet from ceiling to a point below the floor, and inserting the iron columns, on which the beam ends were to rest without temporary support. On the lower wall curved cast-iron bearing plates were placed, and upon each two footing plates with steel wedges between. Upon each set of plates a column was placed, on top of the column a stone cap, and between this cap and the wall, brick set in Portland cement. After the lapse of twenty-four hours, the wedges were driven home until the column formed a substantial support for its share of burden. When the nine columns were thus set, the iron I-beams were introduced by cutting half through the wall between the columns. When the one hundred and twenty-six feet of I-beams were placed on one side, the other half of the wall was cut through and similar beams introduced. This much accomplished, the useless wall below the newly inserted beams and the floor was removed, and the two stores became one.

The arch should not be overlooked. It is at once an architectural and structural point. In 1887 a paper was read by J. J. Flanders, before the old Illinois State association of architects, entitled: "To what extent is it necessary in design to emphasize the essentially structural elements of building?" In dealing with the arch, he says: "When by necessity an arched opening is placed upon the corner in such a position that the designer is unable to counteract the thrust of the arch by buttress or pinnacle, does he violate the truth when he

takes advantage of an iron tie-rod apparent or concealed to render the arch stable? The designer's sense of beauty demands the arch in a position which conflicts with stability. His ingenuity renders it stable, and the artificiality is condoned by the pleasure given. The designer is pleased at the satisfactory solution of a disagreeable problem. The constructor is happy in the fact that while the piers stand the arch will stand. The Hindoo says: 'The arch never rests.' We know that if we can maintain it, a curved lintel though it be and of numerous parts, its stability is assured, and the use of iron becomes a sister coadjutor to the other materials and assists the design in its efforts to perfection. In the use of arch construction there is one feature of frequent occurrence in many late works that calls for strenuous protest, because it conflicts with the rationale and the beautiful. An arch implies that superimposed weight as well as its own is transmitted to the supporting abutments. But when this appearance is violated by supporting iron struts carried to the voussoirs and breaking into the harmony of the well-known characteristics of arch construction, the effect is a brutal violation of the truth and beauty of good construction and design. Are not the structural elements in good design the emphasis of the component parts of the design? Can they be overlooked without impairing the composition? In our minor works we are frequently obliged to lessen this emphasis by various methods, but this should be made without brutal offensiveness and the aggressiveness should be softened with the skill the artist possesses." The stilted arch of the Norman style, the round arch of the Romanesque and the pointed arch of the Gothic are not only architectural forms, but also structural ones, without which the lintel would rule as in pre-Etruscan days.

Winter building in the latitude of Chicago has met with stern opposition up to a decade ago, when the necessities of the city urged the contractors into cold-weather work. Since that time business blocks and large factory buildings have been constructed in winter with as much ease and solidity as in summer, and with greater economy; for the icy season opposes strikes and drives the walking delegate to labor or to the poorhouse. The octopus of discontent removed, the tradesman is willing to give a fair day's work for fair pay, and modern winter, lacking the severity of the old-time season, is disposed to give the industrious man a full opportunity of keeping his hands and brain busy. For a few years past the mason, bricklayer, and plasterer were enabled to work from November to April, with as little inconvenience as from May to November. They use salt in the mortar and in every detail exercise greater care. Some of them even consider frozen plaster superior to that of summer, and decry the use of salamanders except in drying the first coat. Work on the great modern office buildings of the city was carried on throughout the winter of 1890-91, with more energy on the part of laborers and tradesmen, and with greater satisfaction to the architects and contractors than ever experienced in summer work. During the construction of foundations and basements in winter, a temporary roof with board walls is erected for the protection of workmen and work alike and electric lights introduced for night work, so that there is now little difference between summer and winter, or day and night, work.

CHAPTER XVI.



BUILDING ORDINANCES AND LAWS.

LAWS which govern building operations are both municipal and inter-associational, allowing the general laws of the State to rule in the matter of titles, liens, mortgages and party-walls. Architects and contractors possess a practical idea of what such laws demand, unless, indeed, there may be a misunderstanding of the lien law—a something made easy by the ambiguous language of the act itself.

So early as 1833 municipal rules tending toward the protection of houses were adopted. The ordinance of November 6, 1833, prohibited the placing of stove-pipes through roofs, partitions or sides of buildings, unless guarded by tin or sheet iron for a distance of six inches around the pipe. The fine was \$5, with second fine of \$5 if not removed within two days. Fire wardens were appointed and constituted a board of inspectors under this ordinance. The fire of October 12, 1834, which destroyed four buildings at the corner of Lake and La Salle streets, suggested an ordinance giving power to the ward warden to force bystanders to act under his direction in case of fire. On November 3, 1834, an ordinance was adopted prohibiting the conveyance of brands or coals from one house or building to another, except in a covered earthen or fireproof vessel. The penalty for infringing was \$5. The ordinance of November 4, 1835, creating a fire department, provided, among other things, that an owner of a building containing one fireplace or stove should have one leather firebucket, with his name or initials painted thereon. The ordinance of October, 1849, declared the district bounded by Wabash avenue, the main river, the south branch and Randolph street, within the fire limits, and the erection of wooden buildings prohibited, except dock warehouses. In 1850 the limits were extended, the alley between Randolph and Washington streets being made the south line.

Under the act of 1851 the common council had the power to prescribe fire limits within which wooden buildings could not be erected, placed or repaired, and to direct that all and any buildings should be constructed of fireproof materials. This power was extended to the construction of chimneys and to every point affecting the safety of the citizen in the city house. In 1855 and 1857 the ideas of regulating building affairs were supplemented.

The laws and ordinances of the city were reduced under an act, approved February 22, 1861, and compiled and arranged in 1866, by Joseph E. Gary, then a judge of the Superior

court of the city. That act was entitled "An act to amend an act, approved February 16, 1857, entitled 'An act to amend an act entitled "An act to reduce the law incorporating the city of Chicago and the several acts amendatory thereof, into one act, and to amend the same," approved February 14, 1851.'" In section 11 the Board of Public Works is given special charge of streets, public buildings, the removal of buildings and the erection of wooden houses within the fire limits.

Chapter IX of the laws and ordinances, as observed in January, 1866, show Harrison street, the lake, the main river and the south branch to be the fire limits boundaries in the south division; Madison, Jefferson, Lake streets and the river bounded the limits of the west division, and Ohio street, the north branch, main river and Pine street the north division. Within the three fire divisions the following building rules had to be observed: All outside and party walls shall be made of stone, brick or other fireproof material. Outside and party walls not exceeding twenty-four feet in height shall not be less than eight inches thick if in brick, nor less than sixteen inches if in stone; but stores, mills, warehouses and breweries exceeding twenty-four feet in height shall have walls not less than twelve inches in thickness if in brick and eighteen inches if in stone. Brick walls for three-story buildings shall be sixteen inches thick in the first and second stories and stone walls twenty-four inches. Joists, beams and other timbers in outside and party walls shall be separated at least four inches from each other with stone or brick laid in mortar, and all wooden lintels, in front or rear walls, shall recede from the face of the wall at least four inches, except that lintels of timber may be used in rear of cast-iron fronts, and plates of wood may be used in cornices. There shall not be more than thirty feet space between the party or outside walls of any building, unless such building be supported by iron or other columns of fireproof material. All end and party walls shall extend above the sheathing of the roof at least seven inches, and in no case shall the planking or sheathing of the roof extend across any party wall. Warehouses on the river or canal bank and sheds were permitted, but the permit to raise wooden buildings to or above grade called for a brick or stone basement. In other respects the old ordinances of 1866 did not vary in a material degree from the present ordinance.

After the fire stringent measures to enforce the old ordinances were adopted and work was carried on under them until April, 1875, when the general act to provide for the incorporation of cities and villages was adopted. Gradually the line was extended until Twenty-second street was the south line and North avenue the north line. The ordinance of July 20, 1874, made the fire limits coextensive with the corporate limits, and one creating the department for the survey and inspection of buildings was approved June 16, 1875. Up to the present time Thirty-ninth street remains the southern and Fullerton avenue the northern fire limit, within which it is illegal to erect a frame structure. The annexed territory is, unfortunately, left at liberty to build with any material, so that another fire will be necessary to wipe out the frame houses in the extremes of the south, north and west divisions.

In January, 1880, a revision of the ordinances was ordered by the council and Egbert Jamieson and Francis Adams were appointed to revise, compile and present to the council

ordinances for the government of the city. In April, 1881, their work was accepted and ordered to be published. Sections 990 to 1140 of Article IX are practically the same as the sections now to be observed. Additions and amendments of some consequence have been made during the last ten years, so that to-day they form a municipal code which every citizen should understand and observe. The present building and fire ordinances, taken from the municipal code, are as follows:

Frame houses.—It shall be unlawful to repair any frame building within the limits of the city of Chicago, when such building shall have been damaged by fire or decay to the extent of fifty per cent. of the value of such building.

Whenever any frame building shall have become damaged by fire or decay, the extent of which, in the judgment of the commissioner of buildings, exceeds fifty per cent of the value of such building, if the owner of such building objects to the conclusion arrived at by the said commissioner, he or they may file with the commissioner a petition asking for the appointment of arbitrators to determine the question of damage; or if the commissioner of buildings should conclude that the damage is less than fifty per cent. then, and in that case, the owners of adjacent property to such damaged building may claim an arbitration to ascertain the damage to such building; in either case the party asking for arbitration shall pay twelve dollars to the commissioner on filing his petition, which shall be in full of costs of such arbitration. The arbitration to consist of three disinterested persons, one to be chosen by the commissioner, and one by the party filing the petition, and the two thus chosen shall select a third, and the decision of a majority of the persons so selected shall be final and conclusive.

Arbitrators selected to ascertain such extent of damages, before entering upon their work, shall make and subscribe an oath before any officer authorized to administer oaths, that they will make a thorough examination of the premises damaged as aforesaid, and make a just and true report as to the amount and extent of such damage, the report to be signed in duplicate, the original to be handed to the commissioner of buildings, the duplicate to be given to the owner of the premises in question.

Whenever such building shall be adjudged by such arbitrators to have been damaged by fire or decay to the extent of fifty per cent. of its value, such building shall be condemned by the commissioner of buildings, and it shall be unlawful, as aforesaid, to repair the same.

Whenever the owner, agent or occupant shall refuse or neglect, after five days' notice, to petition for such arbitrament, it shall be lawful for the commissioner to declare such premises, as set forth in such notice, as having in his judgment been damaged by fire or decay to the extent of fifty per cent. of its value.

Shingle roofs.—The roof of any frame building (that is more than one story high) that is damaged by fire less than fifty per cent. of the cost of a new similar roof, may be repaired. If the roof is damaged more than half its value, the entire roof shall be taken off, and a new roof put on, having a covering of incombustible material; in no case shall the highest point of the new roof exceed the highest point of the old roof; but if a flat roof is substituted for a

pitched roof, the walls of the building may be extended to meet the requirements of such change in the pitch of the roof.

Any similar building, having a pitched roof covered with shingles, or other combustible material, may have a flat roof of incombustible materials substituted for a pitched roof, the walls of the building carried up to meet the requirements of such change in the pitch of the roof; provided, always, that the highest point of such flat roof shall not exceed the highest point of the roof to be removed.

Walls of a burned house.—Whenever, in the opinion of the commissioner of buildings, any wall or other part of a burned building is dangerous, or when any building shall be deemed unsafe for the purpose for which it is used, or that shall be in danger of being set on fire from any defect in its construction, the commissioner shall notify the owner or his agent, in writing, specifying wherein such danger consists or wherein such building is unsafe or defective. If the owner neglects or refuses, for the space of five days after the serving of such notice, to proceed to put such building in a safe condition, or forthwith to pull down or secure such wall or dangerous part of a burned building, he shall be subject to the penalty of not less than \$5 nor more than \$50 for each and every day such violation shall continue after five days from serving of such notice.

Sheds.—Sheds not exceeding twelve feet in height from the ground at the highest part thereof, and not exceeding two hundred and fifty-six feet area, and privies not exceeding ten feet square, or twelve feet high, may be constructed of wood; such sheds and privies shall be separate structures; such sheds shall not be located on the front part of any lot, nor shall they be used as a dwelling, or for any business purposes whatever, nor shall more than one shed be erected on any one building lot. A room may be partitioned off in such shed for the purpose of a privy, but for no other purpose.

Shelter sheds may be constructed having incombustible roofing not over twenty feet high from the ground to the highest point of roof, the roof to be supported on sufficient posts or piers. Such sheds shall have no inclosing walls or wooden floors.

Brick walls on wooden sills.—Buildings not exceeding twenty feet in height from top of sills to highest part of roof, nor one thousand superficial feet in area, may have brick walls not less than eight inches in thickness, erected on wooden sills, the sills supported on vertical posts, or piers, sunk four feet below the surface of the ground. The foundations under such posts or piers shall be of wood or stone, covering sufficient area to support the weight that may rest upon them with safety; sills to be placed not higher than one foot above the established grade of the street fronting the lot upon which the building is erected, where grades are established, and not exceeding four feet above the ground where grades are not established. The sills and space from sills to the ground to be protected by fireproof material.

Grain elevators.—Any elevator building may be constructed of wood, externally protected by an envelope of incombustible material. The walls of the first story shall be of masonry, not less than twenty inches thick; all window frames and sashes in superstructure shall be of iron. The openings shall have protections of wire grating No. 14 gauge, with meshes not over

one-half inch. The openings in the body of the building and its enginehouse shall have suitable iron shutters.

Timber foundations.—All other buildings hereafter erected in the city of Chicago shall have their circumscribing walls of brick, stone, or other incombustible material, with proper foundations of masonry. If timber is used on which to rest the foundations, such timber shall be sunk below sewer drainage.

Sills and lintels.—Sills and lintels for doors and windows, and posts for store fronts of buildings not more than thirty feet high, shall be of iron or oak timber. For buildings more than thirty feet high, such posts, sills and lintels shall be of incombustible material.

Thickness of walls.—All business buildings not exceeding fourteen feet high shall have enclosing walls not less than twelve inches thick. All two-story business buildings shall have enclosing walls twelve inches thick, and basement walls not less than sixteen inches thick. All three-story business buildings shall have enclosing walls not less than sixteen inches for basement and first story, and twelve inches for second and third story.

All four-story business buildings that are more than one hundred feet deep shall have the enclosing walls (supporting joists) twenty inches thick for basement and first story; sixteen inches for second and third stories, and twelve inches for fourth story. If less than one hundred feet deep, the walls of basement twenty inches, first and second stories sixteen inches, third and fourth twelve inches. All five-story business buildings that are more than one hundred feet deep, shall have the enclosing and division walls (supporting joists), twenty-four inches thick for basement story, twenty inches thick for first and second stories, and sixteen inches for third, fourth and fifth stories. Similar walls for five-story buildings one hundred feet or less in depth, basement wall twenty-four inches, first story twenty inches, second, third and fourth sixteen inches, and fifth story twelve inches (except that division walls may be twenty inches for basement). Division walls in business buildings that are three stories high shall be sixteen inches in basement and twelve inches in first, second and third stories.

Front and rear walls for five-story business buildings shall be twenty inches thick for basement and first story, sixteen inches for second and third stories, and twelve inches for fourth and fifth stories. Similar walls for four-story business buildings shall be twenty inches for basement, sixteen inches for first and second stories, twelve inches for third and fourth stories; provided, that any front or rear wall supporting beams or girders shall be increased eight inches in thickness by two feet, forming buttresses or pilasters directly under such beams or girders; and, provided also, that all twelve-inch division walls in business buildings shall have ledges formed of brickwork projecting four inches from face of wall on each side to receive the bearing of the joist and rafters.

Walls in any business building for the purpose of dividing the interior into rooms, passages or stairways shall be of the thickness required for rear walls of the same height as the required partition walls.

The height of stories for all given thicknesses of walls must not exceed eleven feet in the

clear for basement, eighteen feet in the clear for first story, fifteen feet in the clear for second story, thirteen feet in the clear for third story, twelve feet in the clear for fourth story, and fourteen feet in the clear average height of upper story; if any story exceeds these heights respectively, the wall of such story and of all the stories below the same shall be increased four inches in thickness additional to thicknesses already mentioned.

Table of wall thickness.—In accordance with the foregoing provisions, all walls for business buildings shall be of the thickness designated in the following table:

INCLOSING WALLS.								
	Basement.	First Story.	Second Story.	Third Story.	Fourth Story.	Fifth Story.	Sixth Story.	Seventh Story.
	In.	In.	In.	In.	In.	In.	In.	In.
One story high.....	12	8	..	..	..	..	..	..
Two stories high.....	16	12	12	..	..	..	..	..
Three stories high.....	16	16	12	12	..	..	..	..
Four stories high.....	20	20	16	16	12	..	..	..
Five stories high.....	24	20	20	16	16	16	..	..
Six stories high.....	24	20	20	20	16	16	16	..
Seven stories high.....	24	20	20	20	20	16	16	16
Four stories, less than 100 feet.....	20	16	16	12	12	..	..	..
Five stories, less than 100 feet.....	24	20	16	16	16	12	..	..
Six stories, less than 100 feet.....	24	20	20	16	16	16	12	..
Seven stories, less than 100 feet.....	24	20	20	20	16	16	16	12
DIVISION WALLS IN BUSINESS BUILDINGS.								
For three-story buildings.....	16	12	12	12	..	..	..	..
For four-story buildings.....	20	16	16	12	12	..	..	..
For five-story buildings.....	24	20	20	16	16	16	..	..
For six-story buildings.....	24	20	20	20	16	16	16	..
For seven-story buildings.....	24	20	20	20	20	16	16	16
For five stories, less than 100 feet.....	20	20	16	16	16	12	..	..
For six stories, less than 100 feet.....	24	20	20	16	16	16	12	..
For seven stories, less than 100 feet.....	24	20	20	20	16	16	16	12
FRONT AND REAR WALLS.								
	Basement.	First Story.	Second Story.	Third Story.	Fourth Story.	Fifth Story.	Sixth Story.	Seventh Story.
	In.	In.	In.	In.	In.	In.	In.	In.
Of four-story buildings.....	20	16	16	12	12	..	..	..
Of five-story buildings.....	20	20	16	16	12	12	..	..
Of six-story buildings.....	24	20	20	16	16	12	12	..
Of seven-story buildings.....	24	20	20	20	16	16	12	12
PARTITION WALLS IN BUSINESS BUILDINGS.								
For one story.....	12	8	..	..	..	..	..	..
For two stories.....	16	12	12	..	..	..	..	..
For three stories.....	16	12	12	12	..	..	..	..
For four stories.....	20	16	16	12	12	..	..	..
For five stories.....	20	20	16	16	12	12	..	..
For six stories.....	24	20	20	16	16	12	12	..
For seven stories.....	24	20	20	20	16	16	12	12

Whenever it is sought to increase the height of any building beyond the height for which the original permit was granted, the thickness of the walls thereof shall also be increased in accordance with the above table.

The outside walls of rooms having trussed roofs or ceilings, such as churches, public halls, theaters, diningrooms or the like, if more than fifteen and less than twenty-five feet high, shall average at least sixteen inches; if over twenty-five feet high, at least twenty inches; if over forty-five feet high, at least twenty-four inches in thickness. An increase of four inches in thickness shall be made in all cases where the walls are over one hundred feet long, unless there are cross walls of equal height.

If solid buttresses are employed, with a sectional area of three hundred or more square inches, placed less than eighteen feet apart, and extended to, or nearly to top of walls, four inches may be deducted from the thickness of any wall having such buttresses.

Backing for veneer.—Cut-stone facings of walls shall be backed up with brickwork of same thickness required where no cut-stone is used; in cases where the cut-stone is in great measure self-supporting, four inches less thickness of brick backing may be used; ashlar fronts properly bonded to the brickwork may have backing same as self-supporting stone fronts or wall.

Use of party wall.—Any party wall now existing that shall have been built conformably to the requirements of any law regulating the construction of such walls, and in force at the time of such construction, if sound and in good condition, may be used in the construction of an adjoining building; provided, however, that no brickwork shall be placed on such wall to give additional height to the wall, unless the thickness of such additional wall and the thickness of the old wall in each story shall at least equal the thickness required for division walls of same height for business buildings as required for division walls. This section shall apply in all cases where it is desired to add additional height to any business building. In case of outside walls of any business building being built against the wall of any old building (not being a party-wall) the new wall shall be of the same thickness as required for outside walls in such building.

Domes and roofs to be incombustible.—Domes on any business building shall be made so as to entirely exclude wood in their construction. All mansard or other roofs having a greater inclination than sixty-five degrees shall be rendered fireproof by coating the sheathing at least one inch deep with a firm plaster or cement immediately under the incombustible weather covering of such roofs; strips one inch square may be fastened to the sheathing to receive the fastenings of the slate, tile or metallic roofing; the cement plastering to be laid flush with such strips. All mansard or other roofs in business buildings shall be made entirely of incombustible material.

Slate roofs.—Slate coverings of roofs having less inclination than sixty-five degrees, or for roofing of spires of similar construction, may be fixed directly to wood sheathing or lath: provided, that each course of slating shall be pointed with cement in the joints as far as such joints are to be covered by the succeeding course; also that a bed of similar cement shall be spread on the sheathing at the upper end of the slate, at least five inches in width, and made flush with the course of slate already laid, and forming a bed for the succeeding course of slate. When slates are secured to lath, the entire under side of such slate roofing shall be pointed with cement mortar in usual and best manner.

Stores and flats.—Buildings having the first story, or basement and first story, designed for business purposes, and the upper stories for dwellings, the first floor, being not more than thirty inches above grade of sidewalk, shall have walls of brickwork of the thickness as follows, to-wit: For two-story-and-basement buildings, the basement and first story walls, twelve inches; second story, eight inches; for three-story-and-basement buildings, basement walls, sixteen inches; first and second stories, twelve inches; third story, eight inches; for four-story buildings, the basement wall twenty inches; first story, sixteen inches; second, third and fourth stories, twelve inches; when built in blocks of two or more buildings, the division walls in three-story buildings may be twelve inches in basement, and in four-story buildings they may be sixteen inches in basement.

Dwelling house walls.—Two-story-and-basement walls of dwelling houses may be constructed of brickwork, the basement walls not less than twelve inches thick; walls of first and second stories not less than eight inches thick; and all such dwellings erected in blocks of two or more buildings, shall have division walls in basement twelve inches thick, and first and second stories, eight inches thick.

Three-story-and-basement dwelling houses shall have walls of basement not less than sixteen inches thick; walls of first and second stories, twelve inches; third story, eight inches. Such dwellings erected in blocks of two or more buildings may have the division walls in basement and first story, twelve inches; and in second and third stories, eight inches.

All dwelling houses of more than three-stories-and-basement shall be constructed, if of brick, with outside walls for basement and first story, not less than sixteen inches thick; walls above first story, not less than twelve inches thick; division walls in blocks may be twelve inches thick in first story; division walls in any building that are less than sixteen inches thick shall have ledges on each side projecting four inches from face of wall to receive the bearings of joists or rafters.

In accordance with the foregoing provisions, all walls for dwelling houses shall be of the thickness designated in the following table:

WALLS OF DWELLINGS.	Basement.	First Story.	Second Story.	Third Story.	Fourth Story.
Basement and two stories.....	12	8	8	8	8
Basement and three stories.....	16	12	12	8	8
Division walls, basement and two stories.....	12	8	8	8	8
More than three stories.....	16	16	12	11	12
Division walls, basement and three stories.....	12	12	8	8	8
Division walls, basement and four stories.....	16	12	12	12	12
When first story, or basement and first story, is for shops or stores:					
Two stories and basement.....	12	12	8	8	8
Three stories and basement.....	16	12	12	8	8
Four stories and basement.....	20	16	12	12	12
Three-story building, division wall.....	12	12	12	8	8
Four-story building, division wall.....	16	16	12	12	12

Parapets.—All dwelling houses, including those having first story, used for business purposes, and all other buildings that are not more than two stories high, having flat roofs, shall have all the walls (except front walls) extend sixteen inches above the roof, and not less than eight inches thick, to have proper copings of incombustible material; double-pitched roofs to have their division and side walls carried up, forming fire walls in same manner; walls at the eaves of all roofs (except flat roofs) shall be carried up their full thickness, flush with the upper edge of the rafters of roof, and the sheathing boards shall be bedded in mortar on such walls.

Fire parapets.—Business buildings, more than two stories high, having flat roof, shall have their side and rear walls carried two feet above the roof; division and party walls three feet above, forming fire walls, not less than twelve inches thick, to have copings of incombustible materials; front walls may terminate flush with the upper surface or sheathing of roof. Division and party walls to extend through mansard or other steep roofs, not less than sixteen inches, and have copings same as other fire walls.

Any building not more than three stories high may have the rear wall terminate flush with the upper surface of the sheathing of roof; provided, that the gutter at the eave of such roof is entirely of metal or of wood enveloped with metal, such metallic work to extend across and cover the wall and be properly secured to sheathing of roof.

Chimneys.—No chimney shall be built with less than four-inch walls, and no chimney top shall be less than five feet above the roof (for flat roof, and two feet above the ridge of any pitched roof; ordinary flues in business building shall have four-inch walls and eight-inch jambs; flues larger than two hundred and fifty square inches and less than five hundred square inches shall be surrounded with walls not less than eight inches thick; the wall of such flue above the inlet funnel shall be twelve inches thick for the first fifteen feet around and above such inlet; tops of such chimneys to be at least eight feet above the roof, or five feet above the highest part of roof within fifty feet of such chimneys. Flues with more than five hundred and less than eight hundred inches area shall have not less than twelve-inch walls for the first thirty-six feet; and sixteen-inch walls opposite the inlet and ten feet above the same, top of such chimney ten feet above the roof or seven feet above the highest part of roof within fifty feet of each chimney. Chimneys with flues more than eight hundred and less than eighteen hundred square inches shall have surrounding walls not less than twelve inches thick to the height of forty-five feet, and shall have a four-inch lining with four-inch air space opposite the inlet funnel, the lining to commence four feet below the inlet and extend eight feet above the same, to have openings from flue into the air space at top and bottom of the lining flues having twelve-inch walls, to the height herein mentioned may be continued with walls, not less than eight inches thick); chimney tops of flues having eight hundred to eighteen hundred inches shall be built twelve feet above the roof, and ten feet above any roof within a radius of fifty feet; provided, that all chimneys having walls less than eight inches thick shall be plastered on the brick or be covered with metallic lath or wire cloth, before plastering.

Party wall chimneys.—The provisions of the foregoing sections as to thickness of walls pertaining to chimneys, shall be applicable only to such chimneys as are part of, or situated in any building. Flues in party walls shall not extend beyond the center of the wall. Joint flues in party walls shall be separated by a four-inch withe of brickwork their entire hight.

All chimneys with flues larger than eighteen hundred square inches, shall be disconnected from any main building, and shall be at least ten feet above the highest building within a radius of sixty feet, and in no case less than eighty feet high.

Foundations.—Proper foundations of masonry shall be prepared for the support of buildings. Business buildings fronting on streets having sewers, shall have their foundations sunk at least twelve inches below the drainage, and no foundation shall be less than four feet below the exposed surface of the ground, and in no case shall any foundation rest on any filling or made ground. The breadths of the foundations of the several parts of any building shall be proportioned so that as nearly as practicable, the pressure shall be equal on each square foot of the foundation. Water lime cement mortar shall be used in the masonry of all foundations exposed to dampness.

Brick and hollow walls.—In brick walls every seventh course shall be headers. All fire flues shall be smoothly plastered or have struck joints. Walls shall be securely anchored to the timbers and joists resting upon them. Hollow walls, not bearing walls, may be used in all cases; but all hollow walls shall be bonded or tied together with incombustible anchors, placed not more than three feet apart. If used as bearing walls, the thickness shall be reckoned by their solid part, unless either part is at least eight inches thick and solid connections are made in upright directions not less than twelve inches wide nor more than eight feet apart from centers. In such case two-thirds of the hollow space shall be counted with the solid parts; provided, that in no case shall the ends of the joists or other woodwork be allowed to come within four inches of the hollow space.

Iron wall backing.—The backing of any iron front that is not wholly self-supporting shall be treated as an independent wall. If the iron wall is self-supporting, then the party wall shall be extended to meet the outer thickness of iron, and all vacancies shall be filled with grout to insure a complete separation of adjoining buildings.

Hight of wall.—In the construction of any building, no wall shall be carried to a greater hight than two stories above any other wall.

Roofing.—The weather covering of all roofs, except of cottage dwelling-houses not over sixteen feet high above grade of sidewalk, shall be made of incombustible materials. Composition roofs shall be made of not less than three-ply No. 2 felting, which shall be well cemented together, and be covered with distilled composition and clean screened lake gravel well bedded; such roofs on all buildings that are more than two stories high, shall have four-ply felting, to be swept off and have a second coating of distilled composition and similar gravel. The pitch of composition roofs shall not exceed two inches to the foot. No uncovered tar, composition, resin, felt or woodwork shall in any way be exposed on any roof or its appendages.

Iron veneer.—Appendages to any business buildings above the first story, and above thirty feet from grade of sidewalk on any other building, if not wholly of incombustible material, shall be enveloped with metal; dormer windows, cornices, moldings, balconies, bay windows, towers, spires, ventilators, etc., shall be considered as appendages.

Skylights.—All skylights exceeding fifty superficial feet shall have frame of sash constructed entirely of iron; glass in all skylights, if not prismatic lights, shall be protected by screens made of No. 10 (or heavier) wire, with meshes not exceeding one and one-half inches, such screen to be secured to the sash and kept at least four inches above the glass.

Water leaders.—All buildings hereafter erected shall be kept provided with proper metallic leaders for conducting the water from the roof to the ground sewer or street gutter, in such manner as shall protect the walls and foundations from damage, and in no case shall the water from such leaders, or otherwise, be allowed to flow upon the sidewalks, but shall be conducted by drain pipe to the street gutter or sewer.

All cornices, gutters, eaves and parapets (above first story of business buildings, and above thirty feet from grade of sidewalks on all other buildings) shall be made of incombustible material. All metal cornices shall be riveted together with rivets not more than two inches apart, and shall be supported by iron brackets of $\frac{1}{4} \times 1\frac{1}{4}$ (or heavier) iron, placed not more than four feet apart and firmly secured to the wall. The roof or covering of all cornices may be sheathed with wood, provided such sheathing shall be entirely covered with metal, or where composition roof is used, it may extend within six inches of front edge of cornice, which space of six inches shall be of metal. Cornices constructed of stone shall not extend more than thirty-six inches beyond the face of wall, and their preponderating weight shall be upon the wall.

Scuttle and ladder.—All roofs shall be so constructed as to be reached by scuttle, or by iron steps fastened to the outside of the outer wall; if by scuttle, the same shall be at least 20x30 inches; the frame and lid covered with metal, and shall have a stationary ladder communicating with such scuttle.

Stand pipe.—All business buildings being more than fifty-six feet high, covering an area of more than five-thousand superficial feet, also all buildings exceeding eighty feet in height, shall have a two and one-half inch (or larger) metallic stand pipe within or near the front wall, extending above the roof, and arranged so that engine hose can be attached from the street. All hose couplings shall conform to the size and pattern adopted by the fire department.

Floors to be deadened.—All buildings having an area exceeding ten thousand superficial feet and more than forty feet high, also, all buildings having an area exceeding six thousand superficial feet, and being more than fifty-six feet high, shall have all the floors deadened with mortar or its equivalent, spread at least one inch thick.

Signs.—All signs placed on any building above the sills of the third-story windows shall be made of incombustible material. No wooden signs shall be more than two feet in width.

Hightening rear building.—Frame buildings having a rear addition which is lower than

the main building, may be changed by raising the addition to the same height as the main building, provided the dimensions or area of the building, on its ground plan, shall not be enlarged, permission being first obtained from the superintendent of buildings.

Open work.—Piazas or open porches shall not be enclosed except to form vestibules to entrance doors, or to protect stairways.

Joists, etc., clear of flue.—All floor beams, joists and headers shall be kept at least two inches clear of any wall enclosing a fire flue or chimney-breast, and the space left between the framing, and such flue shall be filled solid with gauged mortar, to be a heavy coat of plastering put on the walls of such flues before any other woodwork shall be placed against it.

Hearths.—All hearths, for ordinary fireplaces, shall rest on trimmer arches, the header kept at least eighteen inches from face of chimney-breast. The backs of all fireplaces shall be not less than eight inches thick, all stovepipe holes to have proper thimbles and stoppers.

Joists entering brickwork.—Ends of joists or beams entering a brick wall shall be cut so as not to disturb the brickwork by any deflection or breaking of the joists or beams. All such joists or timbers entering a party or division wall from opposite sides shall have at least four inches of solid brickwork between the ends of such timbers or joists. All buildings for residence and business purposes shall have the brick project not less than one and one-half inches inside of the face of the wall, between the joists of each floor and ceiling joists.

Arrangement of joists, etc.—Joists and girders in any building shall be of proper dimensions to sustain the load designed to be placed upon them; girders may rest upon piers of brick or stone, or upon columns of wood or iron of proper dimensions. All floor joists shall be properly bridged with cross-bridging. All headers in floor framing of business buildings that are placed at a greater distance than two feet from the end of a timber shall be fixed in proper iron stirrups. Wooden ceilings in shops, stores and storehouses are prohibited.

Board partitions.—Plank or board partitions in any one story shall not aggregate more than three hundred and fifty superficial feet. Partitions, in hotel buildings and tenement houses, made of scantling, to be lathed and plastered, shall be filled in with brickwork, eight inches high, in best manner. Scantling partitions shall not be employed as supports of any floor or roof (except dwelling houses). Stairways shall not be enclosed with partitions made of plank, boards, flooring or scantling, unless plastered on both sides.

In all factories, mills or warehouses more than three stories high and covering an area of more than three thousand superficial feet, all stairway partitions shall be constructed of incombustible materials.

Hoistways.—Any person, firm or corporation desiring to construct or build a hoistway in the manner now required by the ordinances of the city, in which to use an elevator, shall first obtain a permit therefor from the commissioner of buildings. Any person, firm or corporation, who shall construct, or cause to be constructed, any such hoistway without first obtaining such permit, shall be subject to a penalty of not less than \$10 nor more than \$200 for constructing such hoistway without a permit. Hoistway openings shall have trap doors (covered with metal on the under side) on all floors except where elevators are used, with suffi-

cient guards for protection during the hours of business, and said doors shall be kept closed at all other times. Hoistways in which elevators shall be used shall be constructed entirely of brick, from its lowest point extending up through and six feet above the roof. All openings in such hoistways shall be protected by iron doors, and no wood shall be used upon the inside of such hoistways. Doors in such shaft shall be made of metal, and the catches or fastenings upon such doors shall be so placed that they can be opened only from the inside of the shaft, and entirely under the control of the elevator operator. All openings not having doors shall have metallic frames filled with prismatic lights in iron frame.

Open passenger elevator.—Open passenger elevators within the well-hole of an open stairway are not prohibited. In case of automatic trap doors being used at each floor through which an elevator passes, which doors (being lined with metal on the under side) shall close immediately after the passage of the cab or platform of the elevator through any floor, the opening and closing of the doors being operated by the passage of the cab or platform, such elevators may dispense with any shaft whatever.

Plastered partition incombustible.—Any scantling partition shall be regarded as incombustible when plastered on both sides upon iron laths, tile or wire cloth, and filled in with brickwork at least eight inches high from the floor; provided, that in buildings over eighty feet in height such scantling partitions shall not be regarded as incombustible.

CLASS A.—Hereafter all buildings erected within the bounds or limits of the city of Chicago that shall be more than seventy-five feet, and less than one hundred feet in height, from the highest point of front sidewalk grade to the highest point of main roof, and where the pillars, lintels, girders, or the joist of any floor, platform, gallery, ceiling, roof or the rafters, or any other portion of the construction is of timber, or where partitions are of wood construction, the under side of all such joist above that of the lowest basement or cellar floors, and both sides of all wood partitions and the entire exposed surfaces of such posts, girders, lintels or other exposed timber work, or whether the same in any respect, or in any part be of wood or iron, must be protected against fire by a covering of porous terra cotta or hollow tile, or else a body of mortar at least three-fourths of an inch thick, applied on wire cloth, such wire cloth if used, shall be kept at least one inch distance from any woodwork, and such space ventilated. The outside of such porous terra cotta or hollow tile coverings shall receive a coating of mortar, which in the case of pillars or columns of the lower five feet of the same, the mortar shall be made of Portland cement and of at least one inch in thickness. If pillars or columns are covered with plastering on wire cloth, then the lower five feet shall either have a coating of Portland cement mortar at least two inches thick or of hollow tile or terra cotta, coated with cement mortar as above, to the height of such five feet; provided, that the use of corrugated iron not less in weight than No. 27 wire gauge, may be used in any case instead of wire cloth plastering upon walls and ceilings, and on under side of roof joists, should the commissioners of buildings so permit; provided, also, that the same is properly and substantially secured in place as directed or approved by the said commissioner; provided, also, that the covering of posts and girders may be dispensed with if the same are constructed of hard,

sound and solid southern pine or oak timber; each such post or girder having a sectional area of not less than ninety (90) square inches, and dressed smooth on all sides; provided, further, that if oak timber be used for posts, such posts shall be bored through their centers longitudinally with an auger that will cut a bore of not less than one and one-half inches in diameter, then a one-half-inch hole to be bored near top and bottom, through the center of their diameter, tapping and ventilating the longitudinal cavity. If combustible furring be used on the walls of any such buildings, then there shall be projections of brick or tile, or porous terra cotta, or a coating of mortar, either above and below the joists, or between the joists, so constructed as to separate the space between the furring and the walls in the different stories from each other and from the space between the joists, and so as to cut off the passage of air, and form a fire stop between all of such spaces. If girders are used in such buildings, the space above the girders and between the joists above such girders shall be filled with a brick or hollow-tile wall, at least twelve inches in thickness, and the ends of joists resting upon girders shall be kept at least four inches apart, and the space between the ends shall be filled with brick or tile and mortar. On the top of the joists of all floors in all such buildings there shall be a deadening or fire stop of mortar or mineral wool, or the two combined, or other substance of equal fire-resisting qualities approved by the said commissioner of buildings, and applied in a manner as he may direct. In the event of mortar or mineral wool being used, or the two combined, the same shall not be less in thickness than one and one-half inches. All of the provisions of this section shall apply to all wall or other furrings, partitions and ceilings and roofs, and their supports as well as floors. Above each supporting girder and wall a partition of brick, hollow tile, or porous terra cotta shall be carried through the space between the ceiling and roof joists, and shall finish close up to the roof covering; all doors in such partitions shall be of iron.

CLASS B.—In buildings as above specified under Class A, the use of mortar or other deadening under the floors, and of the tile or corrugated iron coverings or plastering on wire cloth on ceilings, and under roofs or upon posts or girders, may be dispensed with; provided the joists used have a sectional area of not less than eighty (80) square inches each, and the floors and roof sheathing are of solid timber not less than three and three-fourths inches thick, both the floors and roof sheathing and joists being planed upon all exposed surfaces; in fact all of the exposed surfaces of timber and plank used in buildings constructed under this class shall be planed; provided, also, that all of the said joists, girders and posts above specified under Class B of this section shall be constructed of hard, sound and solid southern pine or oak timber, each post and girder having a sectional area of not less than ninety (90) square inches, and the posts bored and ventilated as specified in Class A of this section. All stairs in all buildings hereafter erected under the above classifications and this section, shall be constructed entirely of incombustible material.

CLASS C.—In buildings of more than one hundred feet in height from the highest point of front sidewalk grade to the highest point of main roof, all girders, beams, pillars (or interior columns), joists, lintels, partitions and stairs, and the entire roof of same shall be con-

structed entirely of hard, incombustible material. All metal girders, beams, pillars (or columns), joists, lintels, etc., shall be protected against fire by coverings of terra cotta, hollow tile, brick, or else a body of mortar at least three-fourths of an inch thick, applied on a wire cloth, which wire cloth shall be kept at least one inch distance from all such metal works, the outside of such porous terra cotta or hollow-tile covering shall be covered with a coating of mortar, this coating in the case of pillars (or columns) shall, for the lower five feet of the same, be made of Portland cement, put on at least one inch thick, if pillars (or columns) are covered with plaster on wire cloth, then the lower five feet shall have a covering of Portland cement, at least two inches thick. Furring used on the walls of such last-mentioned buildings (buildings under Class C. this section) shall be made entirely of incombustible material, and the use of wood laths in any such building is entirely prohibited. Hollow fire-clay filling or brick arches, or other arching or fireproof filling between the iron beams of floors and roof as may meet the approval of the commissioner of buildings, shall be used, and the space over the top of such filling (should there be a space) and extending up to under side of flooring, and to roof covering shall be filled with a good mortar concrete or coating of mortar, smooth and evenly spread. Any part of buildings above the general main roof line of the same, and more than seventy-five feet high above the highest point of front sidewalk grade to the highest point of main roof, shall be constructed entirely of incombustible material. In interpreting the phrase "incombustible material" as used in this section, it shall not be construed as applying to wood.

CLASS D.—Any part or addition to buildings of either of the above class that may be of less height from sidewalk grade than that of the main building, and which such part or addition is to be connected with such main building upon one or more floors either by door or other openings, or by open spaces with pillars or columns between such main building or other part or addition, such addition or part, or parts, shall be constructed of not less proportionate strength, and shall be of equal fire-resisting qualities from foundation of same to top of roof inclusive, together with all parts and appendages above the general roof line of same, and shall be constructed upon the same principle in all respects equal to that of the main or principal building to which such lower part or addition belongs, and which is being erected under either of the above classifications regulating the construction of such buildings as aforesaid.

CLASS E.—Upon the raising by additional stories or otherwise of buildings now existing, or which hereafter may be built, and extend to a height not exceeding one hundred feet, as described in Class A of this section. The additional stories to such buildings shall be so constructed, and every part of such building that is being changed, altered, repaired or remodelled, the material used, and the manner of construction so far as such additional stories, or new, altered, changed, repaired or additional work may extend, shall conform in its entirety to all of the provisions of this section; provided, however, that all stairs under this class (Class E) shall be constructed of incombustible material, and all partitions upon all floors enclosing such stairs, or stairways, shall be protected against fire by a covering of porous

terra cotta, hollow tile, or else a body of mortar, at least three-fourths of an inch thick, applied on wire cloth, as hereinbefore provided, or of solid brick walls; provided, also, that all iron work of the supporting interior construction, both new and old, shall be covered and protected against fire as above described in this section; provided, further, that upon the raising by additional stories or otherwise, of buildings now existing, or which hereafter may be built, and extended in height exceeding one hundred feet, as described in Class C of this section, the additional stories of such building shall be so constructed and the original building so remodeled that the complete structure shall conform in its entirety to all of the provisions of this section relating to its said Class C; and provided, further, that church buildings and elevator buildings shall not be held to be within the provisions of this section. Any and all ordinances, or parts of ordinances, in any way conflicting with this ordinance are hereby repealed. This ordinance shall be in force from and after its passage.

Fireproof doors, etc.—All stores, storehouses, mills and manufactories that may hereafter be erected in Chicago, which are more than two stories high, shall have doors, blinds or shutters made of fireproof metal, on every window and entrance where the same do not open on a street, or are within fifty feet of any opposite building. When in any such buildings the shutters, blinds or doors can not be put on the outside, they shall be put on the inside, and hung upon iron eyes or frames independent of any woodwork; shutters above the first story to be arranged so that they can be opened from the outside. Prismatic lights, in iron frames, shall be regarded as an equivalent to iron shutters.

Ladders, fireescapes.—All buildings, except such as are used for private residences exclusively, in said city of Chicago, of four or more stories in height, shall be provided with one or more metallic ladders, or metallic fireescapes, extending from the first story to the upper stories of such building, and above the roof and on the outer walls thereof, in such location and numbers, and of such material and construction as the commissioner of buildings and fire marshal of said city may from time to time determine. After such determination shall have been made as aforesaid, the commissioner of buildings, may at any time, by a notice in writing served upon the owner, agent or lessee or occupant of any such building, by leaving with such owner, agent, lessee or occupant, or at his or her or their residence or place of business, a copy of such notice, require such owner, agent, lessee or occupant or either of them, to cause such metallic ladder or fireescape, or ladders or fireescapes to be placed upon such buildings within thirty days after the service of such notice; provided, however, that all buildings more than two stories in height, used for manufacturing purposes, shall have one metallic ladder for every twenty-five persons, or less, employed above the second story. In case such owner, lessee, occupant, or either of them, so served with notice as aforesaid, shall not, within thirty days after the service of such notice upon him or them, place or cause to be placed, such metallic ladder or fireescape upon such building, as required by this article and the terms of such notice, he or they shall be subject to a fine of not less than \$10 nor more than \$200, and to a further fine of \$50 for each week of such neglect to comply with such notice after the service of the same.

Projections.—The face of wall, pilaster or column, of any building above the level of its main water table, unless such column or pilaster is merely part of any portico or window or window dressing, shall not project beyond the building line.

May extend porticoes.—Porticoes to any building extending through one or two stories may have their plinths extend four feet over the building line, but bay or oriel windows to dwelling houses shall have the body of such window not more than three feet over the building line, and no part of such window shall be at a less distance than eight and one-half feet above grade of sidewalk; brackets projecting not more than fourteen inches to be kept five feet above the sidewalk.

Smokehouses.—Smokehouses shall be constructed throughout of incombustible material, with ventilators at or near the top, and guards not less than four feet above the fire beds sufficient to prevent the meats from falling into the fire. If they open into other buildings, such openings shall be protected by iron doors or shutters properly and thoroughly constructed.

Petroleum stores.—Buildings designed for the storage of petroleum, or articles of like nature, shall be constructed as follows, to wit: Their walls shall not be less than sixteen inches thick, nor more than sixteen feet high; their floors shall be made of fireproof paving or concrete, upon the ground, which shall be at least two feet below the street grade; their roofs shall be of metal, or in best manner of composition roof, to have fire walls eighteen inches high all round, not less than eight inches thick, and have copings of incombustible material.

Theaters.—The egress, openings and stairways of theaters, or other rooms wherein crowds of people occasionally assemble, or wherein large numbers of employes are kept at work, shall in no case be less than five feet wide, nor aggregate a less proportion than eighteen inches for each one hundred persons such theater or other room may contain or accommodate. This provision to apply to the doors of each gallery or compartment of such building, as well as to the exterior openings. All doors of such buildings or rooms shall be made to swing outward.

Manufacture of combustibles.—All buildings over two stories high, used for the manufacture of combustible articles, or materials, wherein more than two hundred employes are kept at a time, must have at least two egress stairways which are at least fifty feet from each other.

Lumber factories.—No building within the limits of the city of Chicago shall be used or occupied, in whole or in part, for any of the trades or occupations hereinafter mentioned, to wit: Planing mills, sash, door and blind factories, carpenter or cooper shops, wagon or carriage manufactories, cabinet and furniture factories, wood turning and veneering works, agricultural implement manufactories, box or shingle factories, or any other wood-working factory or shop, unless such a building so occupied shall have in connection with it a brick or fireproof vault of sufficient capacity to contain all shavings, sawdust, chips, or other light combustible refuse connected therewith, and all such shavings and other light combustible

refuse shall be removed daily from such premises to such vault. In no event shall proprietors, owners or lessees of such manufactories allow combustible refuse to accumulate upon any lot, or in any building, unless stored in a fireproof vault.

Firescaping.—No person shall hereinafter, either as owner, lessee or agent, use or occupy, or permit the use and occupation of any store, factory, workshop or other structure, where any person or persons shall be employed as workmen or workwomen, for wages, in any trade or occupation, unless every such store, factory, workshop or other structure shall be provided with sufficient doors and stairways for the escape of the employes in event of fire or other accident happening, under the penalty of not less than \$25 for each and every offense, and a further penalty of \$50 for each and every day such owner, lessee or agent shall, after the first conviction, neglect or refuse to comply with any provision of this section.

Fireproof stairway.—Every store, building, factory or other structure, wherein any person or persons shall be employed, above the first story thereof, in any trade or occupation, as workmen or workwomen for wages, shall contain and be provided with a good and sufficient fireproof stairway for each twenty-five feet of frontage of every such store, building, factory or other structure.

Arrangement of machinery.—In every factory, workshop or other place or structure where machinery is employed, the belting, shafting, gearing, elevators and every other thing, when so located as to endanger the lives and limbs of those employed therein, while in the discharge of their duties, shall be, as far as practicable, so covered or guarded as to insure against any injury to such employes. Every vat, pan or other structure with molten metals or hot liquids, shall be surrounded with proper safeguards for preventing accidents or injury to those employed at or near them.

Weather-proofing.—The walls and roofs, doors and windows, shall be kept in good repair, so as to keep out rain, wind and snow.

Any person or persons neglecting or refusing to comply with any of the requirements contained in the last four preceding sections, after notice so to do from the commissioner of buildings, shall be subject to the penalty of not less than \$10 for each such neglect or refusal, and the further penalty of \$25 for each and every day such neglect or refusal shall continue.

Protection of woodwork from furnace heat.—Hot air, hot water, steam or other furnaces, whether brick or metal, shall be kept at least ten inches, and the smoke flue at least twenty inches, off from any unprotected woodwork. All furnaces shall be placed on foundations of brick or stone, with proper hearths, of incombustible material, at least twenty-four inches wide in front of the ash pit. All hot-air conductors that are placed within ten inches of any woodwork shall be made double, one within another, with at least one-half inch space between the two. All hot-air registers shall be set in incombustible borders not less than two inches in width; all such borders shall be firmly set in plaster of paris; openings in floors for registers shall be lined with bright tin to receive the register boxes, the lining to be kept at least one inch distant from such register box. I. C. or I. X. bright tin shall be used in the construction of all hot-air flues and their appendages. Floors under all stoves shall be pro-

ected by a covering of incombustible material. Stoves shall be kept at least twenty inches, and their smoke pipes twelve inches from any unprotected woodwork. The woodwork of all boilerhouses and boilerrooms shall be kept at least six feet from the boiler, and four feet from the breeching or smoke conductor, and one foot from the dome of the boiler, unless such woodwork is properly protected with incombustible material, and then there shall be at least two feet space from the boiler or smoke pipe and the protection. The floors of all rooms when containing stationary boilers shall be made of incombustible materials, five feet on all sides and at least eight feet in front of any boiler. When portable boilers are used on wood floors of any building, such wood shall have a close protection of incombustible material not less than six inches thick, covering all the space under the boiler and projecting not less than two feet on the sides and rear, and six feet in front, with an air chamber of not less than two inches formed in such protections. Hollow tiles, properly laid, may be used for such protection.

No brick-oven, coffee-roaster or any other brick structure to contain fire shall be permitted on a wood floor of any building.

Wood fences.—No wood fence shall be constructed that exceeds eight feet in height above sidewalk grade, or above surface of the ground where no grade is established.

Foundry cupolas.—Cupolas of foundries shall in all cases extend at least four feet above highest point of roof within a radius of forty feet of each cupola.

Heat and light in certain buildings.—No unprotected heater or movable light shall be kept within any room or building where hay or straw, or any highly inflammable articles are kept or stored; the least protection in such cases shall be a permanent surrounding wire screen with meshes less than one quarter of an inch.

Woodwork and steam pipe.—Steam pipes shall be kept at least two inches from all woodwork, otherwise they shall be protected by a soapstone, or earthen ring or tube, or rest on iron supports. No pipes shall be let into the joists or beams of any floor to a greater depth than two inches, and not more than three feet from the ends of the joists or beams.

Flag poles and awnings.—Wooden flag-poles are permitted to be erected on any building, but their braces and other parts, if any such be put on, shall be of iron. Where awnings are attached to buildings, the framework shall be of metal.

Bracing walls.—Walls of any building shall be securely braced during the process of erection.

Terms.—The term "business building" shall embrace all buildings used principally for business purposes, thus including among others, hotels, theaters and office buildings. The term "wholesale store" or "storehouse," shall embrace all buildings used (or intended to be used) exclusively for purposes of mercantile business or storage of goods. A basement story of any building is defined as a story whose floor is twelve inches or more below the sidewalk, and whose height does not exceed twelve feet in the clear; all such stories that exceed twelve feet high shall be considered as first stories.

Height from grade.—The heights of all buildings for the purposes of this article shall be

taken from the grade of sidewalk to a point half way from the lowest to the highest point of roof.

Chimney foundation.—Any chimney not forming a part of a wall shall rest upon the ground, with proper foundation, and in no case shall any chimney rest on or be supported by frame work, beams or posts of woodwork of any description.

Elevator doors.—All doors in shafts of elevators shall have latches so contrived that a key shall be used to unlatch the doors from the outside, but may have a knob or handle to open the door from the inside.

Privilege of police and inspectors.—No occupant, owner of or contractor for any building, or any other person, shall in any way hinder or prevent any authorized officer from entering, during business hours, any business building, or any other building in process of construction; but no dwelling house shall be entered after it is occupied, without the consent of the occupants.

Inserting a stone or brick basement.—Any frame building may be raised for the purpose of constructing a basement story under such building; the principal floor of such building shall not be elevated more than eight feet above grade of sidewalk; except one-story cottages, which may be raised twelve feet; the walls enclosing such basement shall be of brick or stone work; if of brick, and the superstructure is only one story high, the walls shall not be less than eight inches thick; if two stories, the walls shall be twelve inches thick, all such walls to have proper foundations of masonry. If the building to be raised is a church or other hall or assemblyroom, the thickness of the basement wall shall be proportioned to its length and other conditions, to be approved by the commissioner of buildings.

Driving iron posts in streets.—Iron bars shall not be driven into the roadway of any street for the purpose of attaching guy-ropes of derricks. Posts may be set up opposite any derrick for the purpose of attaching guy-lines. Such posts shall be not less than eight inches square, of sound timber, sixteen feet long, set at least four feet into the ground. Guy-ropes attached to such posts shall be kept at least ten feet above the surface of the street.

Area ways.—Any person desirous of utilizing the space under the sidewalks in front of any building owned by him, shall construct a sufficient stone wall to retain the roadway of the street, and shall extend the side walls, division and party-walls of such building under the sidewalk to such curb wall; the sidewalk in all such cases shall be of incombustible material entire, supported by walls or iron beams and columns; openings in such walks for the admission of coal or light shall be covered with prismatic lights in iron frames, or with iron covers having a rough surface, and in no case will a smooth surface be tolerated on any such cover. No plain surface of glass shall be placed in any sidewalk. In all cases where sidewalks are to be thus used, a permit shall be first obtained from the commissioner of buildings; such permits shall specify the details of such construction. The owner or owners of the property in front of which the sidewalk space is so utilized or proposed to be utilized shall, before receiving a permit to so use it, give to the city a good and sufficient bond in the sum of five thousand dollars (\$5,000), to be approved by the city comptroller, that he or they

will keep each sidewalk and the openings therein in a good and safe condition, and that they will hold the city harmless against any and all accidents that may arise from such use of such sidewalk space and from openings in the same.

Alteration of buildings requires permit.—Before the erection, construction or material alteration of any building in the city of Chicago, the owners, architect or builder, shall submit to the commissioner of buildings full specifications and plans of the proposed construction or alteration, and a detailed statement in writing; such statement shall give: First, the location of the proposed work. Second, general dimensions, number and hight of stories. Third, dimensions of joists and timbers and distance apart. Fourth, dimensions of supporting iron work. Fifth, for what purpose the building is designed. The owner, his agent or architect, shall then sign an agreement that he will construct the work in accordance with the description as set forth in such specifications, plans or detailed statement, and all matters and things connected with such construction or alteration of any building shall be done in strict compliance with the building ordinance. Thereupon the commissioner of buildings shall issue a permit to make such construction or alteration, upon the payment of the fees and water tax hereinafter mentioned in this article; and it shall not be lawful to proceed to construct or materially alter any building without such permit.

Before the erection, construction, alteration or repair of any building, or any part of any building, in the city of Chicago, the owner, architect or builder, shall pay fees and water tax as follows:

For every 1,000 brick used in the construction of building.....	\$ 05
For every cord of rubble stone used in the construction.....	06
For every 1,000 yards of plastering used in the construction.....	1 50

Permit for obstruction of street, one dollar for the first month and two dollars per month thereafter for each month that any material or debris remains in the street. Permit for each shed not exceeding the size provided for in Section 999 of the revised ordinances of 1881, fifty cents. Permit for each shelter shed as provided for in Section 1000 of the revised ordinances of 1881, for each one thousand cubic feet or part thereof, five cents. Permit for each building of brick or stone masonry, which does not exceed in area 25x40 feet, and one story in hight, one dollar. Permits for all structures of masonry, or of masonry and other material combined, which exceed in area 25x40 feet, and more than one story in hight, shall pay for each one thousand (1,000) cubic feet, or fractional part thereof, contained in said structure, ten cents; provided, that the cubic contents of basements and mansard stories shall be included in said measurement.

Use of street or sidewalk.—Any person having the use of any portion of the street or sidewalk for the purpose of erecting or repairing any building, or for any other purpose, shall cause a red light to be placed in a conspicuous place in front of such obstruction, from dark until sunrise, each night during the time such obstruction remains. A sidewalk or passage way, at least four feet wide, shall be kept in front of any new building, as far as it is practicable, making allowance for the proper handling of any materials to be used in or about such building.

Any work or alteration or addition made for any purpose in, to or upon any building, except the necessary repairs not affecting the construction of the external or party walls, chimneys, stairways or height of a building, shall to the extent of such work of alteration or addition, be subject to the regulations of this article.

Removal of frame buildings.—Any person desiring to remove a wooden building shall first obtain the written assent of such removal from persons owning a majority of feet front of lots in same block in which it is proposed to locate such removed building, and also a majority of persons owning front feet opposite the proposed location and within one hundred and fifty feet of the same; provided, however, that this section shall not apply to any person removing a building upon his own premises, and not going upon the premises of any other person, or upon any street, alley, or other public place, in making such removal.

No person, except a licensed housemover, shall remove any building within the limits of the city, and every such person shall, annually, before engaging in said occupation, obtain a license therefor from the mayor, and no such license shall be granted until the party applying therefor shall have given a bond in the sum of \$5,000, with good and sufficient sureties to be approved by said commissioner, conditioned, among other things, that said party will pay any and all damages which may happen to any tree, pavement, street or sidewalk, or to any telegraph pole or wire belonging to the city of Chicago, whether said damage or injury shall be inflicted by said party or his agents, employes or workmen, and conditioned, also, that said party will save and indemnify, and keep harmless the city of Chicago, against all liabilities, judgments, costs and expenses which may in anywise accrue against said city in consequence of the granting of such permit or license, and will in all things strictly comply with the conditions of his permit. Upon execution of said bond and its acceptance by said commissioner, a license shall be issued, and the said licensed person shall in each and every instance, before removing any building, obtain a permit so to do from the commissioner of public works, and shall pay to said commissioner a fee of \$5, whereupon said commissioner shall issue a permit, stating specifically all the conditions, prescribing the route to be taken, and limiting the time for the removal. No frame building in the city of Chicago shall be removed unless such building is worth fifty per cent. of the cost of a similar new building. Buildings in public parks shall not be subject to the provisions of this article.

Icehouses.—Houses to be used exclusively for the storage of ice may be constructed of wood, with incombustible roofing, the walls to be enclosed with an envelope of incombustible material. Eight-inch brick walls with proper foundations of masonry may be used for such envelopes, iron or slate may be used, but no coating of mineral substances, or "fireproof paint," so called, shall be considered as incombustible, and such houses shall be used for no other purpose than the storage of ice.

Arbitration.—Any person desiring an arbitration to determine any question arising in the operation of this article shall file a petition with the commissioner of buildings, asking for the appointment of arbitrators, and shall deposit the sum of \$12 with said commissioner for

the payment of cost of such arbitrators. The arbitrators shall be chosen and qualified as set forth in this article.

Theaters, etc.—Every theater, opera house, hall, church or other building intended to be used for public assemblages, shall be deemed a public hall within the meaning of this article.

Permit to erect a public hall.—Any person desiring a permit to erect any public hall shall make application to the commissioner of buildings, in compliance with the provisions of this article.

Public hall stairways.—No stairway to any public hall or part thereof shall rise more than ten feet without a platform, and no winders, wheeling or circular steps shall be used. Each stairway and passage way shall have a strong hand rail on each side thereof through its entire length.

Exits equal to accommodation.—Every public hall, with accommodations for five hundred or more people, shall have at least two separate and distinct exits, to be as far apart as may be found practicable. Public halls, accommodating seven hundred or more persons, shall have at least three separate and distinct exits. The exits from all galleries shall be independent of and separate from the exits of the main floor.

Elevation of main floor.—No portion of the main floor of any public hall not used as a theater, and with accommodations for five hundred persons, shall be elevated to a greater height than thirty-five feet above the street grade. Public halls with accommodations for one thousand persons or more shall have the main floor not over twenty-five feet above the street grade; no portion of the main floor of any theater, with accommodations for five hundred or more persons, shall be more than ten feet above the street grade. In all such theaters the proscenium wall shall be of brickwork, not less than sixteen inches thick, extending from the ground through and four feet above the roof; this brick wall to extend entirely across the building from the floor of the stage to the ground. All openings required in any part of the wall (except principal opening) shall have proper iron doors.

Fireproof floors in theaters.—All auditorium floors in theaters shall be fireproofed, either by deafening the same with at least one inch of mortar, or have the under side of joists lathed with iron and plastered with at least one heavy coat of mortar. All partitions for rooms or passages in theaters, if not made bodily fireproof, shall be plastered on both sides on iron or wire lathing. The preceding sections shall apply only to theaters or public halls that may hereafter be erected. The following sections shall apply to theaters or public halls that are now or may hereafter be erected or constructed.

Word "exit."—All egress openings in public halls shall have the word "exit" conspicuously placed over them, and shall otherwise conform to the requirements of this article. The aisles or passages in such halls shall at all times be kept unobstructed.

Theaters.—The term "theater" shall, for all purposes of this article, include all public halls containing movable scenery or fixed scenery, which is not made of metal, plaster or other incombustible material.

Fireproofing and ventilation.—All materials used for scenery shall be coated with such

paint, washes, etc., as will make it, as far as possible, incombustible. All theater or other places of public amusement having a seating capacity for over five hundred persons and having a platform or stage, and using drop curtains or shifting scenery, shall have a suitable ventilator placed upon the roof and opening to the space above the stage. Such ventilator shall be arranged with valves or shutters that can be readily opened in case of fire, so that a current of air will pass over the stage and outward through such ventilator. Any other contrivance having the same effect and approved by the commissioner of buildings may be used instead of the ventilator above described.

Standpipe in theaters.—All such buildings shall have a water standpipe and water plug, to be placed on the stage or platform, or in its immediate vicinity, which shall be connected with the water pipes or street mains of the city, and shall be put in under the directions and to the satisfaction of the fire marshal or commissioner of buildings. Hose shall be attached to such standpipe, of such size as may be directed by said marshal, to have nozzle and stopcock attached thereto; such hose shall be of sufficient length to extend to the farthest limits of such building or place of amusement, and shall at all times be kept in good order and repair, filled with water under pressure and ready for immediate use. All public halls with accommodations for one thousand or more persons shall have at least one standpipe in the street or alley on the outside of the building, from ground to roof, with hose attachments close to a window or door at each floor or gallery.

Fire alarm.—Such hall shall also be provided with a fire alarm telegraph apparatus, connected by the necessary wires with the headquarters of the city fire alarm telegraph, or such other place or places as the fire marshal shall direct.

Extinguishers.—It shall be the duty of all owners, agents, lessees and occupants of such public hall to provide such fire extinguishing apparatus at such points about the building as the fire marshal shall direct.

Private firemen.—It shall be the duty of the owner, agent, lessee or occupant of any theater with accommodations for one thousand or more persons to employ one or more competent, experienced firemen, approved by the fire marshal, to be on duty at such theater during the whole time it is open to the public; such firemen shall report to and be subject to the orders of the fire marshal, shall be in uniform and shall see that all fire apparatus required is in its proper place and in efficient and ready working order.

License.—The license for each public hall shall state the number of persons it has accommodations for, and no more than that number shall be allowed to enter such hall at any one time, which number shall be governed by the number of feet of exit of the doors and passages, and shall be approved by the commissioner of buildings.

Inspection of elevators.—It shall be the duty of the commissioner of buildings to cause a careful inspection of all passenger and freight elevators in the city of Chicago, at least once in six months, and see that said elevator shafts and doors are in a perfectly safe condition and in accordance with the provisions of this article. When an inspection of an elevator or elevators has been made by the superintendent, and the same has been put in a perfectly safe

condition, and the shafts and doors in accordance with this article, he shall make out a certificate of the same, which shall state the date of inspection of the elevator, the weight it may safely carry, and that the shafts and doors are constructed in accordance with this article, which certificate shall be framed by the owner and put up in some conspicuous place near such elevator for examination by the public, and the said commissioner shall cause a record to be made of said certificate of inspection in a well-bound book, alphabetically indexed. It shall be the duty of every person owning, controlling, operating or using as owner, lessee or agent, any passenger or freight elevator, in any building within the limits of the city, to cause the same to be inspected and examined by the commissioner of buildings at least once in six months; and every such person shall apply to and procure from said commissioner within five days after each such inspection, the aforesaid certificate of such inspection, and frame and post the same as provided in the last preceding section, under the penalty of not less than \$25 for each and every offense, and \$20 for each and every day he shall neglect or refuse to take out such certificate. It shall be the duty of every person owning, controlling, operating or using, as owner, lessee or agent any passenger or freight elevator in any building within the corporate limits, to employ some competent person to take charge of and operate the same, and any such person who shall neglect to comply with the provisions of the section shall be fined the sum of \$10 for each and every day of such neglect. It shall be unlawful for any person owning, or having the care or control of any elevator, to use or permit the use of the same, after it has been declared by the commissioner to be in a dangerous or unsafe condition and he has prohibited the use of the same, until all necessary repairs have been made, and the owner, agent or other person has procured a certificate from said commissioner that said repairs have been properly done, and that said elevator may be safely used, under the penalty of \$50 for each offense. Said commissioner shall charge a fee of \$2 for the inspection of each elevator, which fee shall be paid to said commissioner by the party applying for the certificate, and before the delivery of the same. All money so collected shall be paid over to the city treasurer weekly, taking receipt and duplicate receipt, which duplicate receipt shall forthwith be filed with the city comptroller, and the commissioner shall report to the city council once in three months a detailed statement of all inspections made and fees collected by him under this article.

Right of entry.—The commissioner of buildings or fire marshal, or their respective assistants, shall have the right to enter any public hall, and any or all parts thereof, at any reasonable time, especially when occupied by the public, in order to properly judge of and discharge their respective duties, and any person who shall refuse admission to such officers or shall attempt to throw obstacles in way of such officers, while engaged in the performance of their duties, shall be liable to the penalty herein provided. The commissioner of buildings or fire marshal shall have the power to order any public hall to be closed, where it is discovered that there is any violation of the provisions of this article, until the same are complied with, and any person who shall refuse, fail or neglect to comply with such order shall be subject to the penalty provided in this article.

Fines.—Any person failing to comply with, or guilty of a violation of any provision of this article, where no other penalty is provided, shall be subject to a fine of not less than \$25, nor more than \$200. Every such person shall be deemed to have been guilty of a separate offense for every day the same shall continue, and shall be subject to the penalty imposed by this section, for each and every separate offense, and any builder or contractor who shall construct any building in violation of this article and any architect having charge of such a building, who shall permit it to be so constructed, shall be liable to the penalties provided and imposed by this section.

Street regulations.—No company, corporation or person, shall be allowed to deposit or place in the street any lumber or other materials, nor shall they load or unload any car from the street, nor erect or maintain any switchhouse or other building upon any street, highway or alley within the city limits, except by permission of the commissioner of public works; any violation of this section shall subject such company, corporation or person to a fine of not less than \$5 nor more than \$10 for each and every offense.

Scattering refuse on the streets.—Any person or persons who shall be engaged in drawing stone, ice, mortar, earth, rubbish or manure through the streets, shall, when conveying or carrying earth, manure, mortar, shavings and rubbish, convey and carry the same in tight boxes, and when carrying or conveying any of the aforesaid articles, in case the same fall into the street or the same be scattered in any street or avenue, cause the same to be forthwith removed; and for any violation of any provisions of this section, he or they shall forfeit and pay the sum of \$5 for each and every offense. Any contractors or other person or persons causing any cart, wagon or other vehicle to be loaded and heaped up with manure, sand, earth, mud, clay or rubbish, so that the contents or any part thereof shall be scattered in any street, avenue or other public place in this city, shall forfeit and pay the sum of \$5 for each offense. The owner of any building, or the contractor for its removal, either or both, who shall suffer the same to be or remain in any of the streets or alleys, or upon any of the public grounds of the city, for any time longer than may be specified in the permission of the commissioner of buildings, shall forfeit a penalty of \$10, and a like penalty for every twenty-four hours the same shall be continued, and such building shall be deemed a nuisance. No person shall be permitted to dress stone in the streets or prepare any material for building in the streets which can be prepared elsewhere.

Location of livery stables.—It shall not be lawful for any person to locate, build, construct, or keep a livery stable on any residence street or avenue in the city of Chicago, within seventy-five feet of the street line, unless he shall have first obtained the written consent of the owners of six hundred feet of the property on each side of the lot or lots upon which it is proposed to construct or keep such livery stable. That such written consent of the property owners shall be filed with the Department of Public Works before a permit be granted for the construction or keeping of such livery stable. Any person who violates this ordinance shall be fined not less than \$50 and not exceeding \$100 and a further penalty of \$25 for each day the person persists in such violation, after a conviction for the first offense.

Hospitals.—It shall be unlawful for any person or persons to locate, establish, build, construct or maintain any hospital for the treatment of contagious diseases, or of any diseased person, on any street, avenue or park, in the city of Chicago, unless he shall have first obtained the written consent of the owners of six hundred (600) feet of the frontage on each side of the lot or lots upon which it is proposed to construct, establish or build such hospital, or place for the treatment of diseased persons. That such written consent of the property owners, as herein provided, shall be filed with the commissioner of public works before a permit shall be granted for the construction, building, locating or establishing of such hospital, or place for the treatment of diseased persons. Any person who shall violate this ordinance shall be fined not less than \$50, and not exceeding \$100, and each and every day any such building shall remain and be maintained shall constitute a separate offense. The sanitary ordinances are given in the chapter devoted to plumbing and sanitary affairs.

The laws affecting architects are as few as they are important. A person following the occupation of forming plans, drawings and specifications for building purposes, representing himself as an architect, is presumed in law, not only as being such, but to be learned in the profession. If there be any obscurity in the drawings and specifications, the contractor should apply to the architect for directions, or be liable for the consequences. There is no fixed rule as to compensation of architects in the United States. The architect's contract does not survive to his representative. So, if there is a contract to complete certain work for a certain sum, the representative of a deceased architect can not recover for the part performance. In competitions, it should always be made clearly understood that the drawings, etc., are subject to approval, for otherwise, the party receiving them will be liable for their value, whether used or not. An architect has not the right to substitute another person in his stead. If the architect fraudulently or capriciously refuses to give proper certificates when required, the builder may maintain an action for specific performance against him for damages. In issuing a certificate, there is an admission of responsibility, for, on that certificate the owner who depends upon the good faith of his professional agent, must issue a check for the amount designated. Hence the courts will hold the architect responsible to the owner, where the latter suffers from the poor work of the contractor, for it was the duty of the agent toward the employer to see and know that that to which he certified was accomplished truly.

A law case of unusual interest to architects was presented to the courts in 1885, and carried to the appellate court in 1886. A Chicago architect was sued by the owner of a block of buildings for damages sustained from alleged faulty construction and neglect of contractors to protect such building during a spell of extremely cold weather. In defense he held that he was not accorded full power in his position of superintendent, and pointed out that the sewer builder, selected by the complaining owner, undermined almost all the partition walls in the entire block in direct opposition to the warnings of the defendant. The latter further denied a final certificate to the mason, sewer builder and other contractors, and thus matters stood when the owner leased the dwellings to tenants. In the course of a year, owing to the dangerous settlement of the walls, the owner removed the tenants so that the

whole structure could be made safe. This done, he sued the architect for cost of repairs and for other losses, and the lower court gave judgment for the amount claimed. An appeal to the appellate court of the first Illinois district resulted in setting aside this judgment on the ground that the jury in the lower court considered special duties of the architect to be unperformed, which duties, in fact, were not provided for in the contract, were not considered or contemplated by architect or employer. The contract specified that "no certificate shall be issued by said superintendent and architect unless the material is on the ground and the work performed on the building." Further, fifteen per cent. of each estimate was to be held until the final certificate would issue. The defendant carried out the agreement literally, and the jury was in error when they entertained the opinion that "proper care" bound the defendant to be always on the ground. This case as viewed by the Appellate court points out clearly that the architect filled the written agreement, and that the only protection to the owner was found in the fifteen per cent. held over from the contractors.

Too often he fails in his duty, and hence trouble arises. The relations between the architect and the builder and the painter have often been strained to the breaking point within the last decade. While the architect aimed to keep up with the times in his designs, he overlooked the true worth of specifications, and paid little attention to the values of material. In July, 1890, the profession was arraigned before the painter's convention, by J. G. McCarthy, who stated that one of the greatest needs of the profession of architecture is a supply of facilities for acquiring a sufficient knowledge of the practical work pertaining to building, to enable the architect to intelligently guide and direct the several mechanics engaged in the construction and completion thereof. While all are willing to concede to the trained architect, a more general and comprehensive knowledge of building in its entirety than can be accredited to any other class, it may safely be assumed that persons engaged in a particular trade pertaining to building, and pursuing it honestly and intelligently, will acquire a knowledge of the especial calling, which can not be expected of the architect, who has to give equal attention to a number of departments. In no other feature of the profession is this lack of practical knowledge more readily discernible than in specifications, and particularly in the specifications of young architects, a majority of whom must, of necessity, in their first years of study, confine themselves to the office and the technique of the profession. It is not here assumed that young men in architecture are not equally as studious and painstaking in their work as are those in any of the other professions; but, unfortunately for the young architect, about one of the first acts of his professional life must be to put his knowledge, or the lack of it, on record, in the form of a set of specifications, the net results of which will, to a great extent, make or mar his future success professionally. The human family is apparently much more interested in the perfect and well-paying building of houses than they are in the preservation of life. The young physician who follows in the fixed grooves of his eminent predecessors may, and oftentimes does, administer No. 7 when No. 8 should be used, and buries his blunder seven feet under ground, soon to be forgotten, even by those most interested, and not at all, or but slightly, affecting his professional success in after life. The

young attorney who misunderstands or misapplies the law can amend his error by the introduction of a new bill or issue, in the form of an amendment, and thus succeed in saving both his fee and his professional good name. The errors of the young architect, however, unlike those of the physician or attorney, can not be hidden away or forgotten, but stare him constantly in the face, whether they are over or under the ground, and in the majority of cases can not be amended, except on the plan of the Indian for repairing his gun—supplying it with a new lock, cock, stock and barrel.

In the paper on party walls the ruling ideas of their relation to architects' commission are given. The general commission is five per cent. on the contract price; but this percentage varies, or a lump sum for designing and superintending is substituted. A by no means uncommon mode of setting about building is for an employer to go to an architect and ask him to prepare a design or set of plans, and then to commence building operations by employing his own builder or workmen, dispensing with the services of the architect. The contract drawings are all made, specifications and, it may be, quantities prepared, and builders are invited to send in tenders. These are found too high, and the owner makes certain alterations and determines to build without the architect's further help. He sees a builder, who promises to carry out the plan for a considerable reduction by making certain alterations, or who suggests that the cost will be less if the work is solely intrusted to him. There are many too willing to jump at such an offer. They do not perceive how easy it is to reduce the quality and quantity of the materials; what a difference second quality brick or inferior stone can make to the cost, or how the alteration of a feature here or the omission of another there can diminish the cost, and, at the same time, seriously injure the design. The bait takes, the plans are remodeled, and the work is commenced. The architect is quietly shelved; he sees the work commenced, and immediately sends in his claim for preparing plans and specifications. The account is disputed, the employer says he has not made use of the plans, and the architect has to sue to obtain his commission. A more artful mode of proceeding is the following: An architect is instructed to prepare the necessary plans and specifications. These are accepted, but not finally approved. The matter remains in abeyance for some time. The owner takes advantage of the aid he has procured. The plans are submitted to friends who make suggestions, the owner sees other buildings, his object being to obtain all the hints he can. A very usual course is to affect that he does not intend to build directly. The architect waits. A few months, or it may be a year or more elapse, when the architect finds to his astonishment that the building has been commenced, but that he has not been further consulted. The owner has put his plans into the hands of a builder to carry out. Anger and disappointment seize the architect, he sends in his account for preparing plans; the evasive reply comes that the original design was of no value—it is returned.

Party walls have always been a source of trouble in towns as fences have been in the country. The question has become doubly important since the advent of lofty buildings. A party wall of the necessary proportions and with foundations requisite for old-style buildings is often found nowadays to be a detriment and a source of greater expense in the erection of

an eight, ten or twelve-story building on the adjoining lot than if no party wall existed, as it has to be either strengthened from the foundation up or taken down altogether. The number of possibilities which experiences of this kind have developed reveals the inadequacy of nearly all the party-wall agreements affecting property upon which lofty buildings may some day be erected. The agent of a large amount of property in the business district gives it as his opinion that there is not one in fifty of the party-wall agreements through which a coach-and-four might not be driven, and that the future party-wall agreement, covering every point that experience has taught and forethought may suggest, will be as voluminous as the ordinary ninety-nine-year lease. There is no statute in the State bearing on this question, all the litigation and the decisions having been governed by common law. The charter of the city conveys the right to legislate on this point, but no ordinance has ever been passed, save as the building ordinance has a slight bearing on it. Some of the eastern states are said to have on their books statutes governing party walls, which provide, where one owner is opposed to the construction of a party wall, for a decision by the courts. The germs of possible litigation which the imperfections of the present form of party-wall agreements contain may soon call for some special legislation on this point, either by the city or State. The present state of affairs gives opportunity for a selfish person or one having a grudge against his neighbor to prevent important improvements.

In 1885 a committee on party walls was appointed by the Illinois State Association of Architects, W. W. Boyington, Louis H. Sullivan and S. M. Randolph being members. The report was made by the first named member October 16, 1886 in the following terms:

Where party-wall written agreements are made between parties, the tenor of the instrument must be the guide in settlement between parties. All party walls should be paid for before they are used by the second party.

Where one party builds a party wall in advance of the other party, the proportion of the architect's commission for building the party wall should form a part of the cost of said party wall to be paid for by the second party.

When the second party occupies said wall, the architect should not charge a commission on the value of said wall, unless he has to replan said wall, and build flues into it and give his time to computing the values of said wall, in which case he should charge commission on the full value of one-half the party wall as a part of his services as architect.

Where the party first building a party wall, does at the second party's request, build ledges and flues in said wall for the future use of the second party, all such additions to the regular party wall should be paid for when they are built.

When the second party occupies the wall he should not be obligated to pay for only as much surface as he occupies, except it be by written agreement that he should pay for all the wall when he uses any part thereof.

In case of a written agreement for a party wall of certain dimensions for thickness, lengths and heights, neither party should be allowed to build higher or lower unless both parties agree to the same.

In building flues, chases, or inserting columns for the especial benefit of either party, they should not extend beyond the center line of the wall for either party, except by written agreement before hand, and as a rule no flue should go nearer than within four inches of the party line. In setting joists in a party wall they should not enter more than four inches. Girders may rest on the wall to the center line when required for a bearing surface.

Neither Mr. Sullivan nor Mr. Randolph aided in compiling this report. On its presentation Mr. Sullivan stated that his views were quite different on the subject, but there being no time for discussion, he presented the following propositions:

There can be no party wall without an agreement, and the same should be in proper form for recording.

The architect's commission should not be a factor in estimating the value of excavation and masonry; he should be paid by the party who employs him to design a building and superintend its construction; his fee should be a commission upon its entire cost.

The *Economist*, dealing with the subject, gives the following cases in point:

A defect in the agreement between Marshall Field and L. Z. Leiter as to the property where the Woman's Temple now stands and that next west forced the dispute between them from the Circuit through the Appellate to the Supreme court. This was a case where a ten-story building was about to be erected alongside of the five-story structure already built. The foundations of this party wall and the party wall itself had to be strengthened, but through an oversight in drawing up the agreement the document read that the party building could only strengthen the foundations on his side. This view of the case was sustained by the Circuit and Appellate courts, but was reversed by the Supreme court, which held that, owing to the nature of the soil, the strengthening of the foundations from one side only was impracticable and absurd, and that the intention of the agreement was in equity to be regarded. An instance is given where an unfavorable agreement has depreciated property with party walls on each side. This agreement irrevocably shut out any strengthening of them for the support of high buildings on either side. The owner refused to make any new agreement. To-day there is a lofty building on each side of it, using the party wall as far up as it goes. Above, each of the high buildings is narrowed, leaving a court on the side next to the property in question, these walls being supported by columns inside the building.

A party-wall agreement was entered into lately, which illustrates the drift. The owner of the vacant property gave his consent to the agreement, on condition that the person building would make the party wall heavy and strong enough for a ten or twelve-story building on the vacant lot, the owner thereof paying his share when the wall was completed, instead of waiting until he made use of it. This method cost the owner of the building but little more than for an ordinary wall, and he received the cost of construction upon completion. The necessity of some statute to regulate such matters is becoming frequently apparent in Chicago. Of the many cases which have transpired, two may be here cited: Certain people who were putting up a high building were compelled, through the necessity of speedy work and the perverseness of the adjoining owner, after having paid for their half of the party

wall to tear it down entirely, put in new foundations, erect a new wall, and take the four inches additional required from their own land. Another instance occurred on the north side, where an owner, in building unwittingly erected his boundary wall some inches over his line on the adjoining lot. When his neighbor discovered this, he demanded damages, and threatened a suit for trespass. The builder offered to make a party wall agreement, or to buy the land so occupied, but in vain, and after every remedy had been tried, paid the sum demanded.

In April, 1889, F. L. Charnley, architect, recovered a judgment for \$2,190 in Judge Hawes' court, in a suit against H. M. Kinsley for \$3,650 for extras, in connection with the building, in 1885, of Kinsley's Adams street establishment. Kinsley paid him \$3,700, and refused to honor the extra bill for \$3,650 on the ground that Charnley was not required to exhibit any extraordinary care and application in the construction of the building. Charnley claimed that it was at Kinsley's instance that he worked nights and Sundays. He also brought suit on a mechanic's lien upon the property for the same amount of the civil suit. In February, 1889, Burnham & Root instituted proceedings in the Superior court against Malcom A. and Benjamin McNeil and Charles W. Rigdon for \$14,000. The defendants, in 1886, conceived the idea of building a hotel at Michigan avenue and Park row, to cost \$400,000. They employed the plaintiffs to prepare plans and specifications, agreeing to pay them five per cent. of the cost. The land on which to erect the hotel could not be secured and the scheme fell through. The plaintiffs insisted that it was through no fault of theirs that the scheme fell through and the hotel was not built, and, as the plans were drawn up, they contended they had a right to their money. The law, on the other hand, maintained that they should have a fair consideration for the prepared plans if they were accepted. Very many cases of this character have been presented to the courts. They seem to be ineffective as examples, for similar disputes are brought up at each term and the army of litigants increases.

The new building contract was adopted by the committee of the American Institute of Architects, the Western Association of Architects, and the National Association of Builders, June 6, 1888. The members of this committee were O. P. Hatfield, New York, N. Y.; Alfred Stone, Providence, R. I., and J. H. Windrim, Philadelphia, Penn., of the American Institute; S. A. Treat, W. W. Clay, Chicago, Ill., and J. F. Alexander, Lafayette, Ind., of the Western Association; John S. Stevens, Philadelphia, Penn.; George C. Prussing, Chicago, Ill., and John J. Tucker, New York, N. Y., of the National Builders' Association. William H. Sayward, secretary of the builders' association, acted in the same capacity for the committee, and when a few of its parts were attacked became the able defender of each article of the Uniform Contract. It varies from the contract adopted in 1883 in many particulars:

This agreement, made the — day of —, in the year one thousand — hundred and —, by and between —, part— of the first part (hereinafter designated the contractor—) and —, part— of the second part (hereinafter designated the owner—)

Witnesseth that the contractor—, being the said part— of the first part, in consideration of

the covenants and agreements herein contained on the part of the owner—, being the said part— of the second part, do— covenant, promise and agree with the said owner—, in manner following, that is to say:

First. The contractor shall and will well and sufficiently perform and finish, under the direction, and to the satisfaction of ——— architect (acting as agent of said owner—), all the work included in the ———, agreeably to the drawings and specifications made by the said architect—, and signed by the parties hereto (copies of which have been delivered to the contractor—), and to the dimensions and explanations thereon, therein and herein contained, according to the true intent and meaning of said drawings and specifications, and of these presents, including all labor and materials incident thereto, and shall provide all scaffolding, implements and cartage necessary for the due performance of the said work.

Second. Should it appear that the work hereby intended to be done, or any of the matters relative thereto, are not sufficiently detailed or explained on the said drawings, or in the said specifications, the contractor shall apply to the architect for such further drawings or explanations as may be necessary, and shall conform to the same as part of this contract, so far as they may be consistent with the original drawings, and in event of any doubt or question arising respecting the true meaning of the drawings or specifications, reference shall be made to the architect—, whose decision thereon, being just and impartial, shall be final and conclusive. It is mutually understood and agreed that all drawings, plans and specifications are and remain the property of the architect—.

Third. Should any alterations be required in the work shown or described by the drawings or specifications, a fair and reasonable valuation of the work added or omitted shall be made by the architect, and the sum herein agreed to be paid for the work according to the original specification, shall be increased or diminished as the case may be. In case such valuation is not agreed to, the contractor shall proceed with the alteration, upon the written order of the architect—, and the valuation of the work added or omitted shall be referred to three (3) arbitrators, (no one of whom shall have been personally connected with the work to which these presents refer) to be appointed as follows: One by each of the parties to this contract, and the third by the two thus chosen; the decision of any two of whom shall be final and binding, and each of the parties hereto shall pay one-half of the expense of such reference.

Fourth. The contractor shall, within twenty-four hours after receiving written notice from the architect—, to that effect, proceed to remove from the grounds or building all materials condemned by ———, whether worked or unworked, or take down all portions of the work which the architect— shall condemn as unsound or improper, or as in any way failing to conform to the drawings and specifications, and to the conditions of this contract. The contractor— shall cover, protect and exercise due diligence to secure the work from injury, and all damage happening to the same by ——— neglect, shall be made good by——.

Fifth. The contractor shall permit the architect—, and all persons appointed by the architect—, to visit and inspect the said work or any part thereof, at all times and places during the progress of the same, and shall provide sufficient, safe and proper facilities for such inspection.

Sixth. The contractor— shall and will proceed with the said work, and every part and detail thereof, in a prompt and diligent manner, and shall and will wholly finish the said work according to the said drawings and specifications, and this contract, on or before the — day of — in the year one thousand — hundred and — (provided that possession of the premises be given the contractor—, and lines and levels of the building furnished him on or before the — day of — in the year one thousand — hundred and —) and in default thereof the contractor— shall pay to the owner — — dollars for every day thereafter that the said work shall remain unfinished, as and for liquidated damages—.

Seventh. Should the contractor be obstructed or delayed in the prosecution or completion of the work by the neglect, delay or default of any other contractor, or by any alteration which may be required in the said work, or by any damage which may happen thereto by fire, or by the unusual action of the elements, or otherwise, or by the abandonment of the work by the employes through no default of the contractor— then there shall be an allowance of additional time beyond the date set for the completion of the said work; but no such allowance shall be made unless a claim is presented in writing at the time of such obstruction or delay. The architect shall award and certify the amount of additional time to be allowed, in which case the contractor shall be released from the payment of the stipulated damages for the additional time so certified and no more. The contractor— may appeal from such award to arbitrators constituted as provided in Article 3 of this contract.

Eighth. The contractor shall not let, assign or transfer this contract, or any interest therein, without the written consent of the architect.

Ninth. The contractor shall make no claim for additional work unless the same shall be done in pursuance of an order from the architect—, and notice of all claims shall be made to the architect in writing within ten days of the beginning of such work.

Tenth. The owner— agree to provide all labor and materials not included in this contract in such manner as not to delay the material progress of the work, and, in the event of failure so to do, thereby causing loss to the contractor—, agree— that if — will reimburse the contractor— for such loss, and the contractor— agree— that if — shall delay the material progress of the work so as to cause any damage for which the owner— shall become liable (as above stated), then — shall make good to the owner any such damage— over and above any damage for general delay, herein otherwise provided; the amount of such loss or damage, in either case, to be fixed and determined by the architect— or by arbitration, as provided in Article 3.

Eleventh. The owner shall effect insurance on said — work, in his own name and in the name of the contractor—, against loss or damage by fire, in such sums as may, from time to time, be agreed upon with the contractor—, the policies being made to cover work incorporated in the building, and materials for the same in or about the premises, and made payable to the parties hereto, as their interest may appear.

Twelfth. Should the contractor—, at any time refuse or neglect to supply a sufficiency of properly skilled workmen, or of materials of the proper quality, or fail in any respect to prose-

cute the work with promptness and diligence, or fail in the performance of any of the agreements on — part herein contained, such refusal, neglect or failure being certified by the architect—, the owner— shall be at liberty, after three days' written notice to the contractor—, to provide any such labor or materials, and to deduct the cost thereof from any money then due or thereafter to become due to the contractor— under this contract; and if the architect— shall certify that such refusal, neglect or failure is sufficient ground for such action, the owner— shall also be at liberty to terminate the employment of the contractor— for the said work and to enter upon the premises and to take possession of all materials thereon, and to employ any other person or persons to finish the work, and to provide the materials therefor; and in case of such discontinuance of the employment of the contractor—, — shall not be entitled to receive any further payment under this contract until the said work shall be wholly finished, at which time, if the unpaid balance of the amount to be paid under this contract shall exceed the expense incurred by the owner— in finishing the work, such excess shall be paid by the owner— to the contractor—, but if such expense shall exceed such unpaid balance, the contractor— shall pay the difference to the owner—. The expense incurred by the owner— as herein provided, either for furnishing materials or for finishing the work, and any damage incurred through such default, shall be audited and certified by the architect—, whose certificate thereof shall be conclusive upon the parties.

Thirteenth. And it is hereby mutually agreed between the parties hereto, that the sum to be paid by the owner— to the contractor— for said work and materials shall be — subject to additions or deductions on account of alterations as hereinbefore provided, and that such sum shall be paid in current funds by the owner— to the contractor— in installments, as follows: —. It being understood that the final payment shall be made within — days after this contract is completely finished, provided, that in each of the said cases the architect— shall certify in writing that all the work upon the performance of which the payment is to become due has been done to — satisfaction; and provided further, that before each payment, if required, the contractor— shall give the architect— good and sufficient evidence that the premises are free from all liens and claims chargeable to the said contractor—; and further, that if at any time there shall be any lien or claim for which, if established, the owner— of the said premises might be made liable, and which would be chargeable to the said contractor—, the owner— shall have the right to retain out of any payment then due or thereafter to become due, an amount sufficient to completely indemnify — against such lien or claim, until the same shall be effectually satisfied, discharged or cancelled. And should there prove to be any such claim after all payments are made, the contractor— shall refund to the owner— all moneys that the latter may be compelled to pay in discharging any lien on said premises, made obligatory in consequence of the former's default.

Fourteenth. It is further mutually agreed between the parties hereto, that no certificate given or payment made under this contract, except the final certificate or final payment, shall, be conclusive evidence of the performance of this contract, either wholly or in part, against any claim of the owner—, and no payment shall be construed to be an acceptance of any defective work.

Fifteenth. And the said owner hereby promises and agrees with the said contractor to employ, and — hereby employ — to provide the materials and to do the said work according to the terms and conditions herein contained, and referred to, for the price aforesaid, and hereby contract to pay the same, at the time, in the manner, and upon the conditions above set forth.

Sixteenth. And the said parties, for themselves, their heirs, executors, administrators and assigns, do hereby agree to the full performance of the covenants herein contained —

In witness whereof, the parties to these presents have hereunto set their hands and seals, the day and year first above written. *In presence of* —.

Rules for measurement were compiled for the Masons & Builders' association in 1880. and approved February 19, that year, by John M. Van Osdel & Co., William W. Boyington, Frederick Baumann, Otto H. Matz, T. V. Wadskier, William H. Drake, W. L. B. Jenney, L. D. Cleveland, D. Adler, J. J. Egan, S. M. Randolph, Theo. Karls, Charles A. Alexander, S. A. Treat, C. M. Palmer, A. A. Cudell, Daniel Burnham, Fred. Wolf, John Addison, F. M. Whitehouse, George H. Edbrooke, Charles J. Furst, J. J. Flanders, L. G. Hallburg, J. L. Meriam, William Thomas, William N. Arend, Edward Burling, Aug. Bauer, O. L. Wheelock, G. P. Randall, Edward Baumann, J. C. Cochrane, P. B. Wight, L. B. Dixon, C. P. Thomas, S. V. Shipman, Henry S. Jaffray, Henry L. Gay, W. A. Wilcox, Fritz Foltz, Frank Spinning, Aug. Blumenthal, John W. Root, George Frommann, E. S. Jennison, W. W. Clay, Henry W. Hill, Charles Rudolph, C. L. Stiles, F. H. Waescher, J. W. Ackerman, A. J. Smith, C. A. Jordan and other architects. As stated in the introduction to the rules by James John, they are the expression of a custom founded in equity and prevailing in this city from its earliest days. If to furnish and lay one thousand bricks in a plain dead wall costs \$10, another piece of brickwork, of equal cost, must be measured as of the same contents even though it does not take one-fourth as many bricks. The plain dead wall, in stone as well as brickwork, is taken as the standard, and the more difficult, complicated, ornamental and hazardous kinds of work are measured up to it, so as to make the compensation equal. To illustrate: If in one day a man can lay two thousand bricks in a plain dead wall, and can lay only five hundred in a pier or arch in the same time, the cost of labor per thousand in such work is four times as much as in a wall, and he is entitled to extra compensation; but instead of varying the price, the custom varies the measurement to compensate for the difference, and thus endeavors to secure a uniform price per thousand for all descriptions of ordinary brickwork, instead of a different price for the execution of the various kinds of work. This is the principal underlying the system. If any new rules or new applications of old rules should be found in the following, it can only be said in their recommendation that the association has carefully considered them in all their bearings, endeavoring to secure equal justice to owner as well as to contractor, and that they will form the standard for deductions as well as for compensation for extra work.

The units of measurement of mason's work are: For excavation, the cubic yard; concrete foundations, the cubic foot; concrete floors, the superficial foot; dimension stone, foot-

ings, the superficial yard; dimension stone, bridge masonry, the cubic foot; dimension stone, surface dressing, the superficial foot extra; rubblework, the cubic foot; rubblework, surface dressing, the superficial foot extra; brickwork, common, the thousand bricks; brickwork, pressed, the superficial foot; tuckpointing, cleaning fronts, the superficial foot; plastering, plain surfaces, the superficial yard; plastering, cornices, the running and superficial foot.

Excavation is to be measured and computed by the actual amount of material displaced—no allowance for rehandling.

Concrete.—Foundations, measure actual contents. Floors, to be measured by the superficial foot of surface between walls. No deduction for tile drains, nor for any pier, chimney-breast, pilaster or other projection of walls of ten feet or less in area.

Dimension stone.—Footings to be measured each course separately; no deductions for drain or other openings under walls two feet or less in width. Bridge masonry, compute actual cubic contents; surface dressing of all kinds extra.

Rubblework.—Footings or all such foundation courses, not exceeding sixteen inches in height each, as are wider than the body of wall above, to be measured by actual cubic contents.

In the following the term "corner" is used for salient angles of walls, and "angle" for re-entering angles: To measure external walls girt building and add thickness of wall for each external angle. Intersection of partition walls two feet or less in width to be measured double; if wider add four cubic feet to actual contents of every intersection for each foot in height. Beveled corners.—For each corner of wall of more or less than ninety degrees, add one foot six inches to length of wall. For round walls add one-fifth of length to girt measure. All projections, such as chimney-breasts, piers connected with walls, and pilasters, to be measured actual cubic contents contained therein, and one cubic foot added thereto for each corner for every foot in height. Independent square piers to be measured by the same rule. Polygonal and round-pier work at special rates. Recesses and slots to be measured solid, and in addition thereto allow one cubic foot for every foot in height. Stone arches are classed as cut-stone work. Deduct contents of windows, doors and other openings, measuring from top of sill to spring of arch, and add two feet of wall for each jamb for every foot in height of opening. No deductions to be made for cut-stone trimmings and lintels.

Brickwork.—Different cities make different bricks; in reality the products of no two brickyards are entirely alike in size, nor, for that matter, all bricks burned in the same kiln. The necessity of acknowledging some standard for purposes of mensuration and calculation is obvious. In these rules the dimensions of a brick are understood to be 2x4x8 inches. We therefore speak of four-inch walls, meaning the width of one brick; of eight-inch meaning the width of two bricks, and of twelve-inch walls, meaning the length of one and width of another brick, etc., although the actual width of the wall will be more or less in excess of these measures. Every superficial foot of "one-half brick (or four-inch) wall" to be estimated at seven and one-half bricks; of "one brick (or eight-inch) wall" at fifteen bricks; of "one and one-half brick (or twelve-inch) wall" at twenty-two and one-half bricks; of "two-brick (or sixteen-inch) wall" at thirty bricks, etc.—increase the number of bricks by seven and one-half for

every additional half brick in thickness of wall. External walls.—If sixteen inches thick or less, girt building and add thickness of wall for each external angle. When thicker add to actual contents of each corner one and one-half cubic foot for every foot in height. Allow for wall ends as for corners. Round walls, sixteen inches thick or less.—For circular walls, of radius sufficiently large to obviate the necessity of using specially molded or cut bricks, add one-fifth of length to girt. When thicker allow for sixteen inches of such wall as per above rule, and measure all in excess as straight work. Cut or molded circular work at special rates. Beveled corners.—For each corner of wall of more or less than ninety degrees add one foot six inches to length of girt. Partition walls, sixteen inches or less.—Intersections of partition walls (bounded together in any manner—not abutting) to be measured double. When thicker add one and one-half cubic foot to actual contents of every intersection for each foot in height. Partition walls connecting with stone walls to be measured one foot into such wall. Chimney breasts and pilasters.—All flues and hollows in chimneys four feet and less in area to be measured solid. When larger deduct one-half contents of flue. For all chimney-breasts and pilasters add eight inches to face for each corner and multiply length so obtained by width (projection). Detached chimneys in buildings and plain chimney tops to be measured solid, and one-half of one cubic foot to be added for each corner for every foot in height. Chimney stacks at special rates.—When square find cubic contents, measuring hollow walls solid, and deducting flue. When round or octagonal take length of diameter for side, and measure as though it were square. Independent piers to be measured like chimneys. Hollow walls to be measured solid. Stone fronts backed with brickwork.—Deduct thickness of ashlar from width and figure like ordinary walls. Gables and wall-tops.—Whenever clipping of brick is required, add to actual contents the length of line of clipping by one foot by thickness of wall. Cornices and belts.—If of running courses only, multiply length by height (greatest girt in the out) by greatest projection. If enriched by corbels, brackets and panels, multiply other dimensions, as given, by greatest girt length. Ledges.—Multiply length by height by greatest projection. Projections.—All other projections if of four inches or less to be measured four inches; if above four inches and not exceeding eight inches to be measured eight inches; if above eight inches and not exceeding twelve inches to be measured twelve inches, etc. Gauged work at special rates. Openings.—Openings to be measured from top of sill to spring of arch and shortest distance between brick jambs for width. No deductions to be made for openings two feet six inches or less in width. One-half of contents to be deducted of openings from two feet six inches to six feet in width. For openings of more than six feet in width allow one foot six inches by thickness of wall by height for each jamb. Slots, panels, etc.—No deduction to be made for slots, chases, niches, panels or other recesses of four feet or less in width; if wider deduct contents, and add two cubic feet of wall for every foot in height. Trimmings.—No deduction in measuring brickwork for cut-stone or other trimmings, bond-blocks, timbers, joists or lintels. Arches not gauged; in vaults, multiply length of chord at spring of arch by height from chord to extrados by thickness of arch; in walls, find contents of arch by same

rule and add to wall measurement; in sewers and tunnel arches, multiply length of extrados by thickness of arch. Floor arches and brick-paving to be measured by the superficial foot and by rule given for measuring concrete. Deduct well-holes. Brick-nogging.—Measure as ordinary brickwork. Deduct full openings—no studding. Cutting of joists and other poles by the piece; of slots, panels and recesses by the linear foot. Tothing, etc.—When ordered by owner or his superintendent to tooth, rack or block, in consequence of delay of iron, stone or other material that mason work may connect with, such tothing, racking or blocking shall be measured as extra work, as follows: increase girt length of such line by one-half, and multiply by one foot by thickness of wall.

Pressedbrick work.—Measure all exposed surfaces of brick by the superficial foot. Cut-stone setting.—Measure vault covers, flagging, curbing and ashlar by the superficial foot; coping and belt courses by the linear foot; all other cut stone by the cubic foot. Tuckpointing and cleaning and pointing stone-work to be measured by the superficial foot of exposed surfaces.

Plastering and lathing to be measured by the superficial yard—from floor to ceiling for walls, and from wall to wall for ceiling. Corners, beads, etc.—All corners, angles of more or less than ninety degrees, beads, quirks, rule joints and moldings to be measured by the linear foot on their longest extension. Add one foot for each stop or mitre. Cornices.—Length of cornices to be measured on walls. Plain cornices, of two feet girt or less, to be measured on walls by the linear foot. Plain cornices exceeding two feet girt to be measured by the superficial foot. Add one linear foot by girt for each stop or mitre. Enriched cornices (cast work) by the linear foot for each enrichment. Arches, corbels, etc.—Arches, corbels, brackets, rings, center-pieces, pilasters, columns, capitals, bases, rosettes, bosses, pendants and niches by the piece. Openings.—Openings in plastering to be measured between grounds. No deductions to be made for openings of two feet or less in width. One-half of contents to be deducted for openings from two to six feet in width. For openings of more than six feet in width deduct contents of openings and allow one foot and six inches for each jamb by height. Deafening to be measured by the superficial yard, floor measure, between walls; take out well-holes.

General Observations.—Material furnished must be for a certain definite building. Contractor must furnish sworn statement to owner to establish a lien, and is liable to fine if not done. Contractor must file sworn statement in full with clerk of court within four months from completion of contract, and must sue within two years thereafter. Subcontractor, mechanic or workman shall, within forty days from completion of contract, serve owner with notice of his claim, unless such notice has been given by sworn statement of original contractor. Subcontractor can not sue to enforce lien until ten days after notice given to owner, and must sue within three months from completion of contract. Lien may be vacated by note, if taken for that purpose, or by note with additional names or security. Pendency of lien does not bar prosecution of suit at law, nor extinguish the debt when property is not sufficient. The lien law is strictly construed, and the persons wishing to avail themselves of its

benefits must comply strictly with its provisions. The acts of the last legislature wrought numerous and important changes in the lien law, and the law as it now stands should be closely studied as well by those who were familiar with the old law as by those to whom the present law is entirely new. Building contracts should, as far as practicable, be reduced to writing—this insures greater certainty, and tends to avoid disputes. In general it is safer to deal directly with principals than with their agents, and in dealing with the latter, be sure that they have authority and are not exceeding it. Before signing a building contract, read the whole of it, and understand the whole of it; and above all, see that it describes the lot upon which the building is to be erected, that the time for the commencement and completion of the work is clearly stated, and that the contract price and times of payment are mentioned and understood. Where it becomes necessary to do extra work, it is always well, and sometimes absolutely necessary, to have the contract for the extras reduced to writing. A claim for extras will support a lien.

The lien law approved March 3, 1845, may be considered the first on the statute books of Illinois. It appears in the revised statutes of that year and also in those of 1854 and 1858, reading as follows:

Section 1. Any person who shall, by contract with the owner of any piece of land or town lot, furnish labor or materials for erecting or repairing any building or the appurtenances of any building on such land or lot, shall have a lien upon the whole tract of land or town lot, in the manner herein provided, for the amount due to him for such labor and material.

Sec. 2. The lien shall extend to all work done and materials furnished under the provisions of the contract, whether the kind or quality of the work or amount to be paid be specified or not; provided, that the time of completing the contract shall not be extended for a longer period than three years, nor the time of payment beyond the period of one year, for the time stipulated for the completion thereof.

Sec. 3. When any sum due by such contract shall remain unpaid after the same is payable, the creditor may, upon bill or petition to the circuit court of the county in which the land or lot lies, obtain an order for the sale thereof, and for applying the proceeds of such sale to the discharge of his demand; and the filing of the bill or petition in the clerk's office and suing out a summons thereon shall be deemed the commencement of the suit.

Sec. 4. The bill or petition shall contain a brief statement of the contract on which it is founded and of the amount due thereon, with a description of the premises which are subject to the lien, and all other material facts and circumstances necessary to a full understanding of the rights of the parties, and shall be considered as the foundation of the plaintiff's action, and upon filing of which with the clerk a summons shall issue thereon against all persons made parties as is required upon filing bills in chancery.

Sec. 5. For the purpose of bringing all parties in interest before the court, the court shall have the power to permit amendments to any part of the pleadings and to issue process, make all orders requiring parties to appear and requiring notice to be given by publication in newspapers, that are or may be authorized in proceedings in chancery; and the court shall

have the same power and jurisdiction over the parties and subject that are or may be conferred upon courts in chancery in respect to proceedings before that court.

Sec. 6. Suits instituted under the provisions of this chapter shall be placed upon the common law docket and shall stand for trial at the term of the court to which the summons is made returnable. The summons shall be served by the sheriff as other process; but if not served ten days before the return day thereof, the cause shall be continued, unless the parties agree to a trial at that term of the court.

Sec. 7. Defendants shall answer the bill under oath, and the plaintiff shall except or reply to the answer as though the proceeding was in chancery; the answer shall be regarded as the plea of the defendant, and by the replication thereto, an issue shall be formed which shall be tried by the court or by a jury under the direction of the court, as the court may direct or the parties agree.

Sec. 8. Every defendant served with process ten days before the return day thereof, shall answer the bill or petition on or before the day on which the cause shall be set for trial on the docket and the issue in the cause shall be made up under the direction of the court, and oral testimony shall be received as in cases at law.

(Section 9 provided the notice given by publication in newspapers should be equivalent to personal service of notice. Section 10 provided that other interested parties may become parties to the suit on application to the court. Section 11 prohibited preference for first contracting creditor, and Section 12 made it the duty of the court to ascertain the amount due each creditor and direct the application of the proceeds of sales in proportion.)

Sec. 13. When the owner of the land shall have failed to perform his part of the contract, and by reason thereof the other party shall, without his own default, have been prevented from performing his part, he shall be entitled to a reasonable compensation for as much thereof as he has performed in proportion to the price stipulated for the whole, and the court shall adjust his claim accordingly.

Sec. 14. If any part of the premises can be separated from the residue and sold without damage to the whole, and if the value thereof shall be sufficient to satisfy all the claims proved, the court may order a sale of that part.

Sec. 15. Parties entitled to liens under this chapter, whose claims are not due or payable at the time of the commencement of suit by any other party, shall be permitted to become parties to the suit, and their claims shall be allowed, subject to a reduction of interest from the date of judgment to the time such claim is due or payable.

Sec. 16. In cases under the provision of this chapter, where there are several claimants, the issue of law and fact, or either, may be tried separately, and in no case shall the want of preparation for trial to one claim delay the trial in respect to the others; but trials shall be had upon issues between such parties as are prepared, without reference to issues between other parties; and when one creditor shall have obtained a verdict or judgment for the amount due, the court may order a sale of the premises on which the lien operates, or a part thereof, so as to satisfy the judgment; provided, that the court may, for good causes, delay

making any order of sale until the rights of all parties in interest shall be ascertained and settled by the court.

Sec. 17. If the person who procures work to be done or materials furnished has an estate for life only, or any other estate less than a fee simple in the land or lot on which the work is done, or materials furnished, or if such land or lot, at the time of making the contract, is mortgaged, or under any other incumbrance, the person who procures the work or materials, shall, nevertheless, be considered as the owner to the extent of his right and interest in the premises; and the lien herein provided for shall bind his whole estate and interest therein in like manner as a mortgage would have done; and the creditor may cause the right of redemption, or other right, to be sold and the proceeds applied according to the provisions of this chapter.

Sec. 18. Suits may be instituted in favor of administrators *et al.* against the representatives in interest of those against whom the cause of action accrued, and in such suits the representatives of any party who may die pending the suit shall be made parties as though it were a suit in chancery.

Sec. 19. Upon proceedings, parties claiming may contest each other's rights as well with respect to amount due as to their right to the benefit of the lien hereby created, and upon all questions may be parties. The court shall require issues of law or fact to be formed, so as to bring about a speedy decision.

Sec. 20. No incumbrance upon land created before or after the making of a contract shall operate upon the building erected or materials furnished, until the lien in favor of the person doing the work or furnishing the materials shall have been satisfied, and upon questions arising between previous incumbrances, the previous incumbrance shall be preferred to the extent of the value of the land at the time of contract, and the court shall ascertain by jury or otherwise what proportion of the proceeds of any sale shall be paid to the several parties in interest.

Sec. 21. Parties in interest shall include all persons who have any legal or equitable claim to lands or lots upon which a lien may be attempted to be enforced.

Sec. 22. Creditors who file bills or petitions may contest the validity of incumbrances as to their amount and justice, and any such shown to be fraudulent in respect to such creditor or creditors generally, may be set aside by the court and the premises made subject to the claims of creditors.

Section 23 invested the courts with all the powers of chancery courts. Section 24 prohibited the enforcement of a lien to the prejudice of another creditor unless suit to enforce be instituted within six months after the last payment for labor or materials should have become due or payable. Section 25 permitted any creditor to maintain an action at law upon his contract, in like manner as if he had no lien for the security of his debt. Section 26 provided that if the proceeds of sale were too limited to meet all demands, execution for the balance might be issued to each creditor. If the proceeds were in excess of demands, the surplus was to be turned over to the owner. Section 27 regulated the costs in lien suits.

The act was revised in 1874, and approved March 25, that year. The services of the architect and superintendent were placed on a level with those of the laborer, contractor and material man, the life and limitation of a lien were specified, provisions binding contractors to make true statements to owners, fixing the status of the subcontractor and many other points explained in forty-seven sections were settled by this act according to the dim lights of that period.

The lien law of June 16, 1887, took the place, on July 1, of the old law governing mechanics' liens of March 25, 1874. That act of 1887 was in reality an amendment of Sections 4, 28, 52, 53 and 54, of an act of revision in force July 1, 1874, and of Sections 29, 30 and 35, of the act of revision approved March 25, 1874, as well as a repeal of Sections 36, 42, 43 and 44 of that act. The object of the changes or amendments was simply to give the owners of buildings more complete security than as they enjoyed under the laws of 1874, but the phraseology was so ambiguous, that in case of a disagreement, the question had generally to be carried into the courts. Section 35 of the act of 1874 was so amended as to leave only fifty-three words of the original act standing. Its construction caused doubts and troubles—doubts as to its bearings on contracts entered into before July 1, 1887, and troubles between owner, contractor and architect. It subjected the contractor to the preparation of an elaborate sworn statement of his financial relation to subcontractors and material men on every occasion when he called for moneys. That statement should show the moneys actually due as well as those which were to become due, i. e., prospective debts, and the owner might withhold a sum equal to that actually due and to become due, while the lien might only cover the cost of labor actually expended and material furnished. Section 29, however, was explicit enough, and offered to the owner, contractor and subcontractor alike sufficient protection. The act should be studied by everyone connected with the building trades.

The lien laws of Illinois, approved in 1874-87, like those of other states, have been variously estimated and interpreted. As understood by the Builders' Exchange of Chicago, the law in force, June 21, 1891, was in substance as follows: Persons entitled to a lien are all those who by contract with the owner of any lot or piece of land, furnish labor or materials or services as architect or superintendent, in building, altering, repairing or ornamenting any house or other building or appurtenance thereto, on such lot, or upon any street or alley and connected with such building or appurtenance. Subcontractors, mechanics and workmen who, in pursuance of the purposes of the contract between the owner and original contractor, furnish labor or material, are also entitled to lien. It has been held that house-painters are entitled to the lien, and so, under some circumstances, are persons who have contributed material or labor to the erection of an engine or machinery upon the premises.

The lien does not attach in favor of persons contributing labor or materials to the erection of fences, or providing houses with lightning-rods; nor are house-movers entitled to a lien for moving a house. One who contracts with a subcontractor, and is therefore a sub-subcontractor, is not entitled to a lien.

The contract above referred to, under which material is furnished or work done, may be

verbal or written, or it may be partly verbal and partly in writing. It may be an express contract, i. e., a contract the terms of which were openly and fully avowed at the time of making it; it may be an implied contract, i. e., such a contract as reason and justice dictate, where, in the absence of an express contract, work is done or material furnished at the instance of the owner or at his request or with his knowledge and approval; or finally the contract may be partly expressed and partly implied. If the contract is expressed, no lien shall be created if the time stipulated for the completion of the work or furnishing materials is beyond three years from the commencement thereof. If the contract is implied, no lien shall be created, unless the work is done or materials furnished within one year from the commencement of the work or delivery of materials. If a contract is expressed as to all but the time within which the work is to be done or materials furnished, it is as to these an implied contract, and the work must be done or materials furnished within one year to create a lien. The contract must relate to some specific lot or tract of land to create a lien.

Merely furnishing materials on open account creates no lien upon the property to which they may afterward become attached. A contract with the authorized agent of the owner is a contract with the owner. Persons dealing with an agent must know the extent of his authority. A husband may act as his wife's agent or vice versa, but such agency is not presumed to exist. A contract with a minor creates no lien upon the minor's lands.

The lien extends to the whole of the lot or tract of land upon which the building or appurtenances thereto is erected, as well as to the building itself or any appurtenances thereto. And the lien attaches to any estate or interest which the persons for whom the work was done or materials furnished, may have in the premises at the time of making the contract, whether it be an estate in fee, for life, for years, or any other estate, or a right of redemption or other interest. No lien attaches to state, county and public-school property, such property being exempt from sale on execution.

If the owner of the land fails to perform his part of the contract, and by reason thereof the other party, without any fault of his own, is prevented from performing his part of the contract, the latter is entitled to a lien for such compensation as the work already done or materials furnished are reasonably worth on the basis of the whole contract price.

Among persons having liens, no preference is given to him whose contract is first made, but all share, in proportion to the amounts of their several claims, in the proceeds of the property sold to satisfy the liens. Any creditor having a lien may contest the right of any other creditor to a lien or the amount of his claim. Any person entitled to a lien, and whose claim is not due at the time of commencement of a suit by any other person, can become a party to such suit, and his claim will be allowed, subject to a reduction of interest from the date of judgment to the time such claim is due and payable.

An encumbrance upon land does not operate on the building erected or the materials furnished, until the lien in favor of the person who has done the work or furnished the materials, has been satisfied. An encumbrance put upon land prior to the making of a contract for improvements thereon, is only preferred to the extent of the value of the land at the time the

contract for the improvements was made. An encumbrance put upon land after a contract for improvements thereon is made, does not deprive the contractor of his lien on both the land and the improvements erected thereon. Any encumbrance shown to be in fraud of the rights of other creditors, may be set aside.

By taking other security, the contractor waives his lien. Taking the owner's note, unless taken in absolute payment, is not a waiver of the lien. Part payment of a claim does not discharge the lien as to any balance still due. Destruction of the improvements by fire or storm does not discharge the lien. Failure to commence suit within the statutory time discharges the lien.

The statute requires the original contractor, whenever any payment of money becomes due from the owner or whenever he desires to draw any money from the owner, lessee or his agent, on his contract, to make out and give to the owner, lessee or his agent a sworn statement containing the name of every subcontractor, mechanic and workman in his employ, or person furnishing materials and the rate of wages or the terms of contract, and the amount due or to become due to them or any of them; and until such sworn statement is given as required the contractor has no right of action or lien against the owner. The owner may, at any time during the progress of the work, demand in writing of the contractor the statement above described, and if the contractor fails to furnish such statement within five days after demand is made, he forfeits to the owner for every such offense the sum of fifty dollars, recoverable in an action of debt.

Every person seeking the benefit of the lien law must file with the clerk of the circuit court of the proper county, a sworn statement, setting forth the amount due him, the time when material was furnished or labor performed, and containing a correct description of the property to be charged with the lien. The sworn statement above described must be filed within four months after the last payment has become due and payable. Under ordinary circumstances, suit to enforce the lien must be commenced within two years after the above described statement is filed with the clerk. If, however, the owner, his agent or any person interested in the real estate, demands in writing that the person claiming the lien begin suit forthwith to enforce the same, then suit must be commenced within thirty days after demand made, or the lien will be forfeited.

Whenever a lien has been claimed by filing with the clerk of the circuit court the sworn statement above described, and the amount shown by such statement to be due is afterward paid, the person claiming the lien shall acknowledge satisfaction thereof, in a book kept by the clerk of the court for that purpose; and by a failure to make such acknowledgment for ten days after payment of his claim, a contractor forfeits \$25 to the owner.

Every subcontractor, mechanic and workman or other person who, in pursuance of the purposes of the original contract between the owner of any lot or piece of ground, or his agent and the original contractor, performs any labor or furnishes material in building, altering, repairing, beautifying or ornamenting any house or other building or appurtenance thereto, on such lot or on any street or alley and connected with such building or appurte-

nance, shall have a lien for the value of such labor and materials upon such houses or building and appurtenance, and upon the lot or land upon which the same stands, to the extent of the right, title and interest of such owner at the time of making the original contract for such house or improvement. The aggregate of all liens of subcontractors, mechanics and workmen shall not exceed the price stipulated in the contract between the owner and original contractor for the improvements, unless, for the purpose of defrauding subcontractors, mechanics and workmen, an unreasonably low price was fixed in such contract; in which case the contract price shall be raised to the fair value of the work done or materials furnished, but this raise in the contract price shall not inure to the benefit of the original contractor.

It is made the duty of the original contractor, whenever any payment of money becomes due from the owner, or whenever he desires to draw any money from the owner, lessee or his agent, on his contract, to make out and give to the owner, lessee or his agent a sworn statement containing the name of every subcontractor, mechanic and workman in his employ, or person furnishing materials, and the rate of wages or the terms of contract and the amount due or to become due to them or any of them; and thereupon the owner, lessee or his agent shall retain out of the money due or to become due the contractor an amount sufficient to pay all demands shown to be due by the contractor's statement, and shall pay the same to the persons entitled. Any payment of money made by the owner, lessee or his agent before such statement is had from the contractor, is illegal, and does not affect the rights of subcontractors, mechanics and workmen to a lien.

If the sworn statement of the contractor serves to give the owner, lessee or his agent true notice of the amount due the subcontractor, mechanic or workman, the latter shall have a lien without any other or further notice to the owner, lessee or his agent; otherwise, such subcontractor, mechanic or workman shall, within forty days from the completion of his subcontract, or within forty days after payment thereon should have been made, cause a written notice to be served on the owner or his agent. If there is a written contract between the original contractor and the subcontractor, a copy of it, if obtainable, should be attached to the above notice and served with it. If the owner is a nonresident of the county in which the improvement is made, or can not be found in such county, the notice must be filed with the clerk of the circuit court, and a copy of it published in some newspaper printed in that county, for four weeks successively after filing the same with the clerk; and if there is no paper published in the county, then the notice shall be posted in four of the most public places in the vicinity of the improvement.

The claim of a subcontractor, mechanic or workman shall be a lien only in so far as the owner is indebted to the contractor at the time of giving such notice, or may become indebted afterward to him as contractor. When the owner or his agent is notified, as above stated, he may retain out of any money due or to become due the original contractor, an amount sufficient to pay all demands due subcontractors, mechanics and workmen or other persons, so notifying him, and pay the same over to the persons entitled; and payments so made shall be the same as payments to the original contractor. If the amount due the original contractor

is not sufficient to pay in full the claims of the persons notifying the owner, it shall be divided pro rata among such persons in proportion to the amounts due them respectively. If the owner does not pay subcontractors, mechanics and workmen the amounts due them, within ten days after he has notice of such indebtedness, then they may, if at that time any money is due from the owner to the original contractor, proceed to enforce their liens in the same manner as the liens of original contractors are enforced.

Where several subcontractors, mechanics and workmen have liens upon the same premises, and the owner of the premises or any of those having liens fear that the amount due the original contractor is not sufficient to satisfy all such liens, the owner or any one or more of those having liens may, by proper proceedings in the circuit court, have the amount due the original contractor and the amount due each of the persons having liens, ascertained, and whatever is due the original contractor shall be distributed pro rata among those having liens, if it is not sufficient to pay their claims in full. If, for any cause, the original contractor fails to complete his contract, subcontractors, mechanics and workmen shall, nevertheless, have liens for what the work done by them or materials furnished is reasonably worth, according to the original contract price, first deducting whatever the owner has rightfully paid on such original contract and any damages he may have sustained by reason of the non-fulfillment of such original contract. Subcontractors, mechanics and workmen must begin suits to enforce their liens within three months from the time of the performance of the subcontract, or during the work of furnishing materials, not reckoning, however, any delay caused in consequence of the amount not being due the original contractor.

Architects' certificates.—Generally an architect is employed by the owner, and payments are made only upon the architect's certificates, issued from time to time as the work progresses. Such certificates ought only to be issued after contractors have given the sworn statement which the lien law requires them to make. The owner can only avoid paying certificates executed by mistake or obtained through fraud. The owner can not avoid payment of certificates on the ground that the work is not completed or that it is not properly done, for as to these matters the owner is bound by the decision of the architect.

The builders as well as the labor organizations of the city protested against what was ambiguous and impracticable in the original act as well as the amended act, and succeeded in having certain amendments made in 1891, in the following amendatory act, approved June 22, 1891.

Section 1. *Be it enacted by the people of the state of Illinois, represented in the general assembly,* That Sections 11, 33, 34 and 35 of an act entitled "An act to revise the law in relation to liens," approved March 25, 1874, in force July 1, 1874, as amended by an act approved June 16, 1887, and in force July 1, 1887, be and the same are hereby amended so as to read as follows:

Sec. 11. When the owner of the land shall have failed to perform his part of the contract by failing to advance to the contractor money justly due him under the contract at the time when the same should have been paid to the contractor, or has failed to perform his part

of the contract in any other manner, and by reason thereof the other party shall, without his own default, have been prevented from performing his part, he shall be entitled to a reasonable compensation for as much thereof as has been performed in proportion to the price stipulated for the whole, and the court shall adjust his claim and allow him a lien accordingly.

Sec. 33. No claim of any subcontractor, mechanic, workman or other person shall be a lien under Section 29 of this act, except so far as the owner may be indebted to the contractor at the time of giving such notice, as aforesaid, of such claim, or may become indebted afterward to him as such contractor; provided, however, the claim of any person for mechanical or other labor, under Section 29 of this act, shall be a lien for twenty days from the last day's work performed by such person, to an amount equal to ten per cent. of the proportionate value of the contract completed up to the date of said last day's work; provided, such notice is served within twenty days from the day when such last day's work was performed by such person serving such notice, and the owner or his agent may retain for said twenty days such ten per cent. out of any money due to or to become due the contractor; and provided, further, this ten per cent shall not be construed as in addition to any per cent. that may be held back in pursuance of the terms of the contract between the owner and the original contractor.

Sec. 34. When the owner or his agent is notified as aforesaid he may retain from any money due or to become due the original contractor an amount sufficient to pay all demands that are or will become due such subcontractor, mechanic, workman or other person so notifying him, and may pay over the same to the persons entitled thereto. In case the amount due the original contractor and the ten per cent. in Section 33 provided, is not sufficient to pay such persons so entitled in full, he shall first pay all claims for mechanical and other labor in full, if the amount due the contractor and the said ten per cent. is sufficient, if not, then pro rata, but if more than sufficient, the balance shall be divided and paid to such other persons, pro rata, in proportion to the amounts due them respectively at the time of such payment. All payments so made shall, as between such owner and contractor, be considered the same as if paid to such original contractor.

Sec. 35. The original contractor shall, as often as requested in writing by the owner, lessee or his agent, make out and give to such owner, lessee or his agent, a statement of the number of persons in his employ, and of the subcontractors or other persons furnishing labor or material, giving their names and how much, if anything, is due or to become due to each of them for work done or material furnished, which statement shall be made under oath, if required of him by such owner, lessee or agent, in which case the subcontractor shall, as often as requested in writing by the contractor or his agent, make out and give to the contractor a statement of the number of persons in his employ, or sub-contractors or other persons furnishing material, giving their names and how much, if anything, is due to each of them, which statement shall be made under oath, if required by such contractor; and, if any contractor or subcontractor shall fail to furnish such statement within five days after demand, made as aforesaid, he shall forfeit to such owner or contractor the sum of \$50 for every offense, which may be recovered in an action of debt before a justice of the peace.

The act is a marked improvement upon the provisions of the law, for it enables the contractor to give a bond to the owner which will protect the owner against all liens on the property in that it requires that the bond shall be recorded, after having been approved by the judge of the court or master in chancery, in the office of the clerk of the Circuit court, in a book kept for that purpose. The act was drafted under the direction of a joint committee of the Builders & Traders' Exchange and Carpenters' Council, and the Trades Assembly of Chicago, and received the approval of Judges Tuley and Altgeld, to whom it was submitted for inspection by the Trades Assembly prior to its introduction on February 26, 1891, by Senator Noonan in the senate of Illinois.

The statute gives no lien to an architect for keeping books, auditing accounts and making settlements with contractors employed in the erection of buildings, nor when a party performs labor as a supervising architect in the improvement of grounds and accessories. When the contract is for the payment of a gross sum for the entire labor agreed to be performed—that for which the statute gives a lien, as well as for that labor for which no lien is given, the lien can not be enforced as to any part of the price to be paid. The contract in such case being entire, can not be apportioned and the performance of it enforced in payments. When it does not appear by the contract, where there is an express one, that the labor was to be performed within three years from the commencement thereof, there will be no lien. When the contract is express it must show that the services are to be performed within that time, or there will be no lien.

The intricacies of the lien law are made evident in the following summary of supreme court decisions: It is indispensable that the party with whom the contract is made shall have some estate or interest in the premises upon which the building is erected or improvement made; but such estate may be the fee or an estate for life or for years, or any interest, legal or equitable in the land. The lien may attach to a mere pre-emption right. Under the present statutes, a party in the possession of land under a contract of purchase, is to be considered the owner only in the sense of the statute, to the extent of the interest he owns, and that interest is what the mechanic's lien affects. The owner of a lot entered into an agreement with P., a relative, whereby the latter was to erect a row of buildings on the lot, those on the east thirty-five feet to cost \$5,846, in consideration of which the lot owner was to convey the balance of the lot, being ninety-five feet, to P. The owner was to execute mortgages on the whole lot to raise money to enable P. to make the proposed improvement. Held, that P. had such an interest in the west ninety-five feet of the lot as would sustain a mechanic's lien, and that the lot owner, having authorized P. to contract for the row of buildings and received the benefits of the improvements, could not escape liability to the mechanics and material men. If the owner of land authorize a third person to enter into a contract for the erection of buildings thereon, he will thereby make his land liable to the lien of the mechanics for labor, etc., thereon. When a release of a mechanic's lien is made, but no one is named therein to whom the release is given, and no consideration is named, the court may look to the extrinsic facts to determine both the consideration and in whose favor the release is intended.

When payment is not made of a demand for which the holder has a lien, and a release of such lien is made for a certain purpose, as to give mortgage priority over it, the court will confine the operation of the release to the purpose intended by the parties thereto. A stranger to the release can take no benefit from the same.

The bringing of a suit to establish and enforce a mechanic's lien is, by implication, a revocation of a prior agreement to arbitrate the matters in dispute. The agreement to arbitrate will not affect the rights of the parties.

The contracts in this case were made with one not the owner of the land, and so no lien can exist in favor of the contractors: *Woodburn vs. Gifford*, 66 Ill. 285; *Wetherell vs. Ohlen-dorf*, 61 Ill. 283.

The owners of the land in this case, B. contracted with P. to erect certain buildings, and he, in turn, entered into personal contracts with the lien claimants in this cause. Their position is that of subcontractors, and they are entitled to no lien, as they have given no notice to the owners as required by the statute. The lien in this case, if any exists at all, was specifically released.

It was the duty of the contractors to inform themselves as to the title to the land, and as to whom they were dealing with: *McCarthy vs. Carter*, 49 Ill. 53.

As a general rule an equitable as well as a legal owner of property may create a mechanic's lien: *Phillips on Mechanic's Liens*, Sec. 66.

The word "owner" includes owner in equity as well as at law. *Atkins vs. Little*, 17 Minn. 353; *Rollins vs. Cross*, 45 N. Y. 768.

Parties having contracted for the purchase of property and entered in possession, will, so far as their equitable interests are concerned, be regarded as owners: *Phillips on Mechanic's Liens*, Sec. 69; *Stockwell vs. Carpenter*, 27 Iowa, 119.

The interest of the owner may be a fee simple, an estate for life, or it may be any estate less than a fee: *Tracy vs. Rogers*, 69 Ill. 662.

It has been held that the fact that a person acted as agent may be shown, although he signed the contract with his own name: *Whitlock vs. Hicks*, 75 Ill. 460.

The liens were not affected by the agreement to arbitrate, as no award was ever made. The bringing of the suit was a revocation of the agreement: *Morse on Arb.* 230; *Peters vs. Craig*, 6 Dana, 307.

Whatever diversity of authority may exist as to the effect of giving a note, or independent security of a third person, or by mortgage, or extension of credit beyond the period in which the lien may be filed, all the cases agree that there will be no waiver when the agreement to give the note or other security has not been performed by the promisor. It would be going too far to say that the builder must have intended to waive the lien in the event of the refusal to comply with the agreement. The contrary proposition comes to that: *Phillips on Mechanic's Liens*, Sec. 285; *The Highlander*, 4 Blatch, 55.

An agreement to extend the time of payment beyond a year, provided a mortgage should be given, will not defeat a mechanic's lien, if the mortgage should not be executed. The

giving of the mortgage was a condition precedent: *Gardner vs. Hall*, 29 Ill. 227; *Lutz vs. Ey*, 3 E. D. Smith, 621.

The record books of the courts are full of accounts of disagreements between owners, architects, contractors, artisans and laborers. A thousand decisions might be cited; but a few will suffice to show that where honor is out of the question, "honesty is the best policy."

Improvements made upon real estate of a fixed and permanent character and attached to the reality by one who has no title or interest in the land and without the consent of the true owner, become a part of the land and the property of the true owner.

In June, 1887, the Pennsylvania Supreme court ruled that a mechanic's lien is not a record. The lien docket is the record, and it alone affects incumbrancers and purchasers. If the claim is not properly indexed, nor indexed at all, incumbrancers are not bound to search through the docket for a claim which has nothing in the index to show its existence.

A mechanic's lien does not attach against the separate estate of a married woman, in the absence of such contract and circumstances as would create the lien upon the property of any other persons who are competent to contract. The contract must be made with her or her duly authorized agent as there can be no lien when a contract does not exist. Such is the law as laid down in the case of *Swartz vs. Sanders*, 46 Ill. 18; *Emory vs. Lord*, 26 Mich. 433, and *Kirby vs. Lead*, 13 Mich. 149. The case of *Sibble vs. Vanderburgh*, 16 Brad. Ill. Appel. 189, shows clearly that when the husband purchases materials on his own responsibility and sole credit, for a house built on his wife's land or lot, the material man may look to the husband alone for payment. He can not have a lien on the premises of the wife.

A contractor abandoned work on a building owing to the failure of the owner to pay according to agreement. The latter notified the contractor that should he not resume work in two days, he would proceed to complete the building and hold the contractor liable for damages. No notice was taken of this threat; the owner finished the building at less than contract price; but the court held that the subcontractors, having filed their liens, were entitled to a pro tanto application of the amount in excess of the actual cost to the satisfaction of their claims.

The parties to a building contract are not bound by a clause, that no claim shall be made for extra work, unless first agreed on in writing; it will not avoid a transaction, implying a verbal agreement, for extra work. Such provision was inserted in United States contracts merely to limit the power of architects and superintendents (*vide Ford vs. United States*, 17 Court of Claims, 40). Again, when the terms of a contract, for the payment of money for work are ambiguous, they will be interpreted most strongly against the promisor of the money, the work having been accomplished (*Gantz vs. Dis. of Col.*). In *Atkins vs. United States*, 17 Court of Claims, an ambiguous contract must be combined to suit the business interests of both parties. An instruction to a jury, ignoring the issue of the architect's

certificate, when the action is based upon a contract requiring such certificate as a direction to the owner to pay plaintiff, is in error, even when the architect had, in fact, been discharged before the completion of the work. This is laid down as law in the case of *Walsh vs. Walsh*, 11 Ill. App. 199.

When work contracted for by a builder is to be done within a specified time, the contract has to be observed. Should delays occur, owing to the inability of the owner of the ground or building to do other necessary work, a sufficient excuse for delays by builder is offered. This view is held by the courts of New York and the two Carolinas.

The law is well settled that the owner does not accept a building by taking the keys and living in it, nor does he thereby waive in the slightest degree his right to have the contract fulfilled to the letter before he pays the contractor. His visits to the building while in progress do not alter the contract or put him under any obligations to accept work not in accordance with it, and if he orders changes at those visits, he only makes himself liable to pay a reasonable price for them, if they increase the actual cost of doing the work. Whether, after moving into the house he can have changes made by other parties, without notifying the original contractor, and charge them to the contractor's account, is a different matter. If the changes are altogether outside the contract, he is, of course, not entitled to make the contractor pay for them. If they were necessary to bring the building into conformity with the contract, he ought to have notified the contractor that they were required, and have given him reasonable opportunity for making them himself, before employing other persons to make them, and it has been held abroad that where this notice was not given, the contractor was not liable for the expense. Aside from the legal technicalities, however, it would probably be fair to both parties to have the contractor pay what it would have cost him to make the work conform to the contract as nearly as this can be estimated, and let the owner pay whatever it actually costs beyond this.

Party walls have been the source of litigation and personal encounters. A few of the leading cases growing out of party-wall dealings have already been given. The latest was presented in January, 1891.

A year before Norman D. Fraser purchased a lot from Joseph S. Sosman and Perry Landis. A party wall divided their property. Fraser bought an adjoining lot and made a contract to construct a six-story building at a cost of \$50,000, which was to be leased to the Union Manufacturing & Storage Company on condition that it was completed by May, 1891. Work was begun, and it became necessary to strengthen the party wall. A new foundation was put under it, when the defendants refused to allow the contractors to go ahead with the work unless Fraser paid one-half of the original cost of the party wall. But his agent filed a bill in the Circuit court to restrain defendants from interfering with the building. It is said that the party wall is on a portion of Fraser's lot, and that when he purchased it there was no understanding that he was to pay for the use of it.

Additions to the height of buildings are also attended with some troubles. In April, 1891, on a bill filed in the Circuit court by the trustees of the estate of Frederick A. Bryan,

Judge Tuley issued an injunction restraining William J. Jefferson and contractors Benjamin G. Robinson and R. A. Dowling from adding two additional stories to a building at No. 175 Monroe street, which adjoins the Bryan block. Jefferson leases the land adjoining the Bryan block, on which is already located a four-story structure. He got permission from the city to put up two more stories, and was doing so with twelve inches of wall. Complainants went to Commissioner of Building Dunphy, and complained that the walls should be sixteen inches in thickness, but the commissioner, it is said, refused to take any measures to stop the erection. An injunction was granted, but a few days later the addition of iron strengtheners to the walls settled the difficulty.

Alignment is a natural law, except in a few modern subdivisions, where a building line has been established. The appeal to the good taste of owners is not always successful, however, and gross outrages on the people of a residence block are not unknown. About nine years ago a petition was presented to the trustees of the old Town of Lake for an ordinance to leave the question of a building line to the people in each block; but its constitutionality was questioned and the petition was cast aside. In June, 1889, Architect Dixon revived the subject in another form. He demanded an ordinance making it illegal for any builder or property owner to erect a house which would project beyond the line of the house nearest the sidewalk of the houses constructed in a block. The subject was transferred to the law department, where it sleeps, leaving the unprincipled and vicious and ignorant to injure a neighbor's property at will.

The system of special assessment is not yet a half century old in this city, but it has been observed in the older cities of Europe for centuries. So early as 1270 the people of Southern France applied the system as we know it to-day, believing in its equitable character. The laws of the village of Auvilar, written in the year given, contain reference after reference to older laws of assessment and condemnation suits. In 1572 the city council of Paris was empowered to condemn a piece of private property for public use, and in 1584 the royal parliament decreed that ornamental grounds belonging to a private citizen should be sold to the curé of St. Martin's parish, to enable him to extend the limits of St. Martin's cemetery. A modern condemnation suit in Chicago, relating to a thirty-six inch strip of land, required to widen a street, finds a suit of the same character tried at Paris in 1612, but in the ancient case a special act of condemnation was necessary. Were it not for such a law the completion of great public works or of works of a semi-public character in cities, such as alley railroads, would be made impossible as one objector could stop the progress of construction by pointing to the line of his property.

While the southern city limit was Twenty-second street, the northern, North avenue, and the western, Wood street, provision had to be made for extraordinary improvements. On March 20, 1846, the council adopted the report of Alderman George Manierre on special assessments and introduced the special-levy system for street improvements. The prospect of the extension of limits in 1847, the hope of having a national nominating convention in 1848, and the talk of a great river and harbor convention in 1847, suggested to the people

the propriety of making a strong, united effort, to have their village or town present, in some degree, the appearances of a city. The population was then 14,169, the total tax collected \$15,825.80; the bonded debt \$16,055.41 and the total assessed valuation \$4,521,656. Under the special assessment act comparatively little was done. The streets were rounded up like the prairie roads of Illinois, and like them were impassable in rainy or damp weather. So late as 1848 it was not an uncommon thing to see a board nailed to an upright scantling, bearing the warning words: "No bottom here." In 1849 a plank roadway was placed on Lake street, from State street to the river, and before the close of 1850 three miles of plank road represented the limit of progress. The law of assessment was found unsatisfactory if not impracticable, and was amended in 1861.

The collections under it, however, appear to have been expended honestly according to the lights of the time. The old special assessment law, 1861-72, gave the power to the Board of Public Works to levy all assessments for public improvements. The system was simplicity itself, but owing to its abuse and the repeated adverse decisions given by the Supreme court in 1870-72, the legislature of April 10, 1872, provided a new method which was adopted by the city September 2, 1872. From April 1, 1861, to April 1, 1872, the board levied \$10,710,685.69 under the old law. The following list shows the total of assessments made in each year since 1861:

Year ending April 1, 1862.....\$	42,635 49	Year ending January 1, 1878	124,498 48
Year ending April 1, 1863.....	46,493 67	Year ending January 1, 1879	284,900 45
Year ending April 1, 1864.....	389,169 31	Year ending January 1, 1880	588,963 44
Year ending April 1, 1865.....	103,576 35	Year ending January 1, 1881.....	980,895 50
Year ending April 1, 1866.....	802,574 56	Year ending January 1, 1882	1,227,169 71
Year ending April 1, 1867.....	317,206 18	Year ending January 1, 1883	1,395,372 98
Year ending April 1, 1868.....	1,354,436 48	Year ending January 1, 1884	2,232,757 04
Year ending April 1, 1869.....	2,395,683 03	Year ending January 1, 1885	2,857,905 28
Year ending April 1, 1870.....	2,836,852 48	Year ending January 1, 1886	2,889,544 80
Year ending April 1, 1871.....	2,359,835 89	Year ending January 1, 1887	3,307,567 99
Year ending April 1, 1872.....	62,222 25	Year ending January 1, 1888	3,160,474 67
Year ending April 1, 1873.....	.....	Year ending January 1, 1889	3,655,956 78
Year ending April 1, 1874.....	749,460 27	Year ending January 1, 1890	4,220,869 93
Year ending April 1, 1875.....	723,254 42	Year ending January 1, 1891	6,987,155 48
Nine months ending January 1, 1876.	60,585 72		
Year ending January 1, 1877	1,516,081 07	Total for thirty years.....	\$47,674,109 70

The special assessments levied in 1881 amounted to \$1,227,169.71; in 1882, to 1,395,372.98; being less than half of the great special assessment of 1870, which amounted to \$2,836,852.48, and which drew down the opposition of the people and the Supreme court alike on the old assessment system. In 1883 the levy almost equaled that of 1870, being \$2,232,757.04.

This, of course, does not include the extraordinary specials in Lake, Hyde Park, Lake View and other suburbs now forming a part of the city. They were laid on the new settlers of those townships so thoroughly, between 1882 and 1889, and expended with such little regard to decency and honesty that the real pioneers of modern Chicago began to look at each other in amazement and ask the question: "Have we settled here simply to become

the prey of tax-eaters?" No other people could tolerate such lavish expenditure and receive so little. No other city could give them promise of financial reward for their liberal donations. The people were so oppressed that an act providing for the payment of assessments in five annual installments became a law in 1889, each installment remaining unpaid to bear interest at six per centum per annum. This act is undoubtedly one which affords a great relief from the oppressive system of former years. It gives to the workingman an opportunity to save his home from summary sale, while giving him a chance to aid in improving the city and enhancing the value of his own property. Under its influence great good has resulted, but the chance for the syndicate in and out of the council to pocket one hundred per cent. on contracts, instead of ten per cent., remains to be corrected. A copy of the legislative act providing for the payment of special assessments in installments follows:

Section 1. *Be it enacted by the people of the state of Illinois, represented in the general assembly,* That Article IX of an act entitled "An act to provide for the incorporation of cities and villages," approved April 10, 1872, in force July 1, 1872, be and the same is hereby amended by adding thereto the following sections, viz.:

168 *a.* MAY BE DIVIDED INTO INSTALLMENTS. See. 55. That the amount of any special assessment for any local improvement in any city, incorporated town or village may be divided into installments, when so provided by the ordinance providing for the said improvement, the first of which shall not exceed the sum of twenty-five per cent. of the total of said assessment, and which shall be due and payable from and after confirmation of said assessment. The remaining portion of said assessment, after deducting the said first installment, shall be divided into four equal annual installments, which said installments shall be payable annually thereafter, and collected in the same manner that other assessments are now collected. Each of said four last-named installments shall bear interest at the rate of six per cent. per annum from and after the first day of July next succeeding the confirmation of said assessment; provided, that when said confirmation shall not be had before the first day of March in any year, that said four last-named installments shall not bear interest until the first day of July in the following year after the said confirmation; provided, that in cities containing a population of fifty thousand or more, this and the following sections shall not apply, except in cases where any such special assessments shall exceed in the aggregate the sum of fifteen thousand dollars.

168 *b.* MAY BE PAID BEFORE MATURITY—INTEREST. See. 56. That any installment or installments which may be assessed against any tract, lot, block or piece of land, may be paid at any time before maturity, in which case interest shall be charged only to the time of payment, and upon such payment the property for which said payment is made shall be discharged from the lien to the extent of such payment.

168 *c.* WHEN BY INSTALLMENT—ORDINANCE. See. 57. Whenever any city, incorporated town or village desires to make the collection of any special assessment, as aforesaid, by installments under the provision of this act, the ordinance providing for said improvement shall also state that the same shall be collected by installments, and fix the amount of the first installment.

168 *d.* ASSESSMENT ROLL—WHAT TO CONTAIN. See. 58. Upon the assessment roll to be returned by the commissioners shall be designated, in appropriate columns, first the amount of each installment; second, the total amount of the assessment, which said items shall be carried out and set opposite each tract, lot or piece of property so assessed.

168 *e.* NOTICE—WHAT TO CONTAIN. See. 59. The notice to be given by the collector as now provided for by law when the assessment is under the provisions of this act, in addition to what is now required, shall contain the amount of each installment, the rate of interest deferred installments bear, the date of payment and that the whole of said assessment, or any installment thereof, may be paid at any time at the option of the owner or owners of said lot, block, piece or tract.

168 *f.* ORDER OF CONFIRMATION. See. 60. The order of confirmation that shall be entered upon the return of any such assessment roll shall apply to all of the installments thereof, and may be entered in one order.

168 *g*. WARRANT FOR COLLECTION. Sec. 61. The warrant for the collection of any such special assessment to be made hereunder shall contain a copy of such certificate of the judgment, describing the lots, blocks, tracts or parcels of lands assessed and the respective amounts assessed upon each lot, tract, piece or parcel of land, and the year in which each installment is payable.

168 *h*. PROCEEDINGS FOR JUDGMENT. Sec. 62. Proceedings for judgment and sale against lots, tracts, pieces and parcels of land for which the assessment has not been paid, shall be had in the same manner as now provided upon each installment in the respective years in which they become due and payable, and the laws now in force, in so far as they are applicable, shall apply.

168 *i*. PAYMENT FOR IMPROVEMENT DONE—VOUCHER. Sec. 63. Payment for any improvement done or performed under the provisions of this act shall be made in the following manner: From the amount of the first payment, when it shall be collected, shall first be paid all the costs of making the said assessment, including court costs. The remainder of said payment shall then be paid to the person or persons entitled thereto on the contract for said work. The amount remaining due upon the contract for said improvement shall then be divided into four equal parts, and the authorities of any city, incorporated town or village, shall issue a voucher to the person or persons entitled thereto for each part payable in same order and manner that the installments are payable, and said vouchers shall bear the same rate of interest per annum that the said installments bear. Said vouchers shall be made payable to the order of the person or persons entitled thereto, and state the improvement and the installment for which they are issued. They shall also contain the following:

In consideration of the issuing of this voucher, I hereby for.....
sel.....heirs, executors, administrators and assigns, accept the same in full payment of the amount herein stated, and relinquish any and all claims or liens I may have against the (city, incorporated town or village) of.....for the work mentioned herein, or for the payment of this voucher, except from the collection of the installment herein named.

(Signature of person receiving the same.)

168 *j*. PERSON ACCEPTING VOUCHERS. Sec. 64. Any person or persons accepting the vouchers, as provided herein, for work done or performed upon any local or public improvement, shall have no claim or lien upon the city, incorporated town or village, in any event for the payment of said vouchers or the interest, except from the collection of the installments for which said vouchers are issued; and provided, that this section shall apply to all holders of any of said vouchers, whether the original contractor or their assigns.

168 *k*. SURPLUS REMAINING—NOTICE. Sec. 65. If, upon the payment of the money and issuance of the vouchers, as provided for in the last section hereof, there shall be any surplus remaining of said special assessment over and above the payment aforesaid, it shall be the duty of the proper authorities of said city, incorporated town or village to at once cause the respective installments to be credited with their respective proportion of said surplus, and in case any person or persons have, before said credit has been entered, paid his assessment or any part thereof, without having received the benefit of said credit, the proper authorities shall at once cause notice of such overpayment to be sent by mail to the person by whom such overpayment was made, and upon proper proofs the same shall be repaid.

168 *l*. SPECIAL ASSESSMENT—WHEN CITY MAY ADVANCE TO PAY DAMAGES. Sec. 66. In case said special assessment shall be made for the purpose of paying the compensation awarded for the taking or damaging of private property for public use, payments may be made as provided herein, in the case of contracts let and the acceptance by the owner of any lot, piece or tract taken or damaged of the vouchers issued shall be deemed payment to said owner or owners of said compensation, and upon proof thereof, an order of possession may be entered, as is now provided; provided, that after a special assessment has been confirmed to pay for property taken or damaged for public use, the city council in cities, and the president and board of trustees in villages, may appropriate and advance a sufficient amount to pay the compensation awarded, or so much of the same as shall not have been paid by acceptance of vouchers as herein provided; provided, however, that such appropriation and advancement shall in no way affect the collection of said assessment, but the same shall be collected in the same manner as though said appropriation had not been made; and, provided, however, that when such assessment shall have been collected, that the same, together with the interest thereon, shall be paid into the general fund of said city, incorporated town or village in liquidation of the amount so advanced.

168 *m*. WHEN COLLECTED BY INSTALLMENT. Sec. 67. In all cases where special assessments shall have been made, but not confirmed, it shall be lawful for any city, incorporated town or village, through

its legislative body, to provide by ordinance that said assessment may be collected by installments, under the provisions of this act.

168 n. EMERGENCY. SEC. 68. "It is hereby declared that an emergency exists, and therefore this act shall be in force from and after its passage."

A summary of the assessment levied in 1890 points out the necessity for this act.

Total assessments for wooden block pavement:		Total assessments for laying stone sidewalks:	
North division.....	\$ 673,651 75	North division.....	\$ 22,922 22
South division.....	1,092,150 06	South division.....	72,900 37
West division.....	2,127,856 21	West division.....	35,886 09
	<hr/>		<hr/>
	\$3,893,658 02		\$ 131,708 68
Total assessments for constructing sewers:		Total assessments for erecting gas lamp posts:	
North division.....	\$ 128,571 31	North division.....	\$ 13,704 79
South division.....	340,863 82	South division.....	25,595 10
West division.....	552,526 77	West division.....	47,317 75
	<hr/>		<hr/>
	\$1,021,961 90		\$ 86,617 64
Total assessments for miscellaneous street and alley improvements:		Total assessments for erecting boulevard lamp posts:	
North division.....	\$ 123,689 66	North division.....	\$ 3,052 00
South division.....	495,960 74	South division.....	6,578 50
West division.....	69,189 75	West division.....	4,879 00
	<hr/>		<hr/>
	\$ 688,840 15		\$ 14,509 50
Total assessments for laying water service pipes:		Total assessments for erecting gasoline lamp:	
North division.....	\$ 76,771 60	North division.....	\$ 2,411 75
South division.....	194,610 96	South division.....	1,676 00
West division.....	219,316 30	West division.....	5,803 00
	<hr/>		<hr/>
	\$ 490,698 86		\$ 9,890 75
Total assessments for laying plank sidewalks:		Total assessments for making lamp post connections:	
North division.....	\$ 22,687 93	North division.....	\$ 357 00
South division.....	111,837 98	South division.....	119 00
West division.....	104,830 15	West division.....	492 00
	<hr/>		<hr/>
	\$ 239,356 06		\$ 968 00
Total assessments for laying private drains:		Total assessments for erecting Dycott lamps:	
North division.....	\$ 48,818 00	North division.....	\$ 392 00
South division.....	97,505 55	South division.....	.....
West division.....	92,261 06	West division.....	.....
	<hr/>		<hr/>
	\$ 238,584 61		\$ 392 00
Total assessments for street and alley opening and widening:		Total.....	
North division.....	\$ 21,561 87	\$6,987,155 18	
South division.....	115,433 91		
West division.....	32,973 23		
	<hr/>		
	\$ 169,969 01		

In the report of the Bureau of Special Assessments, dated December 31, 1890, Superintendent Jones says: "I submit herewith, in tabular form, a statement of special assessments made in this department during the past year, with a summary of the estimated cost of the

same, also the amount of special assessments made in each year during the past thirty years. The aggregate for the period last named is \$47,694,099.70, the average amount for each year being \$1,589,803.32. During the year just closed the amount levied on abutting and adjoining property for all descriptions of street improvements was \$6,987,155.48, or about \$6.50 per capita of population. As compared with the previous year, it shows an increase of \$2,766,285.55, or 65.3 per cent. The willingness with which the property owners imposed upon themselves this enormous amount of special taxation is the best evidence of their material prosperity and their unbounded faith in the commercial destiny of our city. Since the annexation of the towns of Lake View, Jefferson, Lake, Hyde Park, and a large strip of Cicero, the labors of this department have increased fully a hundred per cent, and the prospects are that this ratio of increase will prevail for the next five years, if not for a longer period—the more assuredly so should the municipal legislature determine that the street cleaning and sprinkling be done by special assessment. In view of these conditions it is evident that some steps should be taken during the next (present) session of the state legislature to secure an amendment to the existing special assessment law, whereby its machinery may be so simplified that the present tortuous system of issuing rebates may be avoided, and the rapidly increasing volume of book-keeping dispensed with. That the former is a growing burden upon the people no one who has closely examined the operations of the present law will deny. In my judgment it should be so amended that the assessment for each improvement shall be based on its actual cost. This would entail no hardship on the contractor, for he would not be required to wait for his pay for a longer average period than one year, and he could make his financial arrangements that at the end of the time specified he would receive his money. The difference in cost to the property owner would not amount to more than bank interest, and for all practical purposes, so far as he is concerned, the transaction would be the equivalent of a cash one. In addition the property owner would be relieved, to his perfect satisfaction, from the annoyance and trouble of looking after his rebate, as is the case at present.

“In the matter of improvements ordered on the five-year plan, the amendment I have suggested would save an almost infinite amount of perplexing labor. The existing law demands that one-fifth of the rebate shall be allowed on the payment of each installment, and this necessitates complicated book-keeping, not only in this department, but also in the offices of the city collector and county treasurer; and as this system of ordering improvements seems to meet with growing favor at the hands of the public, the complications and possibilities of error are bound to grow in similar ratio. The promiscuous ordering of improvements, evidently without the knowledge or concurrence of the property owners, and afterward staying or annulling them, should be stopped at once, not only in the interest of those who would be directly affected, but also in the interest of public economy. It would, besides, relieve this department of a large amount of unnecessary labor. I would recommend, in the interest of a more economical administration of the bureau, that the law be further amended, so that the cost of ‘publication of notice’ be reduced from sixty to eighty per cent. Each separate assessment now requires the publication of a mass of legal verbiage which would

be equally if not more efficacious were it used but once, followed by the list of improvements.

“At present the commissioners who bear the chief part in the machinery of the special assessment law, receive a fee of \$2 each for every assessment roll filed in the County court. I would recommend that the fee be reduced to fifty cents—or, which is still better, that the law be so amended that city employes be appointed to act as such commissioners without additional compensation. In conclusion, I renew the recommendation I made a year ago, viz.: That it would be desirable for the city council to instruct the commissioner of public works, fire marshal and superintendent of streets to prepare during the summer vacation the list of streets to be improved during the ensuing year, and make report thereof at the first meeting in September. The committees on streets and alleys, to whom the list is usually referred, would then have a sufficient time wherein to consult with the property owners for final action, and the special assessment bureau would thus be relieved from the necessity of making a number of assessments which for years to come will not be carried into effect, and which, consequently, would have to be repealed.”

When the townships were annexed the system of special assessment had to be extended. The building of sewers by special assessment in all parts of the city was decided upon by the council, in December, 1889. The resolution adopted is as follows:

“That the cost of all twelve-inch sewers hereafter ordered to be constructed shall be provided for by special assessment, upon the property thereby benefited; and that in case of sewers hereafter ordered to be constructed of more than twelve inches in diameter so much of the cost thereof as would be equivalent to the cost of a twelve-inch sewer shall be provided for by special assessment upon the property benefited thereby, and the excess of such cost over the cost of a twelve-inch sewer, and the cost of constructing all sewers across street intersections, as well as the cost of manholes, catchbasins, and the connections thereof with such sewers, shall be provided for by general taxation. Whenever hereafter an order shall be approved for the construction of any sewer the commissioner of public works is hereby directed, with the advice and assistance of the law department, to cause a proper ordinance to be prepared providing for the construction thereof by special assessment in accordance with the requirements of this resolution.” The single-tax idea gained ground. The object was to lessen the drain on the general fund, and cause taxes for improvements to fall more heavily on the land, because a special assessment is made wholly on the amount of frontage a man owns. The special-assessment plan will undoubtedly be enforced to a considerable extent by the drainage commissioners, and it will be found that this system will be far more expensive than by a general tax, because the routine required in each special assessment is a considerable item of expense in addition to the cost of the work. The people of the townships have been burdened by special assessments in the past, but their representatives in the council voted for the resolution. Subsequently the plan was extended to streets throughout the city, and in fact to every improvement tending to benefit the property abutting.

CHAPTER XVII.



LABOR AND ITS ORGANIZATIONS.

CONCERNING the subject of labor, as applied in the building trades, much of little consequence has been written. The term regards the artisan rather than the laborer, i. e., it regards one acquainted with the mechanical arts rather than one depending on his strength without skill, and includes the artist, artificer and the architect. In other words all tradesmen, superintendents and architects connected with a building are laborers in the eye of the law, and the term is applied to helpers such as hod-carriers and lumber handlers. Under the law all are at liberty to labor or to refrain from labor, leaving the natural injunction, God helps the earnest hands that help themselves, to remain an ordinance urging men on to labor, to see what their work is, to accept it and to persevere in it. A Roman motto of three words, *Labor omnia vincit*, shows what the essence of labor is. Without it the world would be a wilderness and the people nomads; for the Great Architect, who designed the lily to grow up beautiful in idleness, decreed also that man should labor. Civilization requires this decree to be observed voluntarily, because, where civilization rules, one man can not compel another to work and should not be permitted to prevent another from working, save where the law of necessity drives the artisan of the building trades to undertake a task involuntarily, the completion of which would prove injurious to the well-being of the community or state.

Thus Boston, which took the first decisive step, in colonial times, toward communal protection from wrong, was the first to lead, in republican times, in the correction of the wrongs of labor. The carpenters and shipbuilders of that city were compelled to work twelve hours. In some of the other trades the hours were longer and in none of them less than twelve hours. This continued from the earliest settlement of Massachusetts until 1810, when the carpenters and builders agitated a ten-hour day. This daily term of labor was generally observed until 1867, when congress declared that eight hours should constitute a day's work in the navy yards. That year the carpenters and other tradesmen of Chicago commenced the agitation for an eight-hour day, taking precedence of Boston, this time by a period of two years, though yielding to that city in the actual organization of the "Eight-Hour club" of 1869. Indeed, activity was so marked in labor circles that the British ambassador at Wash-

ington, reporting to Downing street said: "There are few countries in which the working-man is held in such regard as in the United States of America. The laboring classes may be said to embrace the entire American nation. Every man works for a living, follows a profession or is engaged either in mercantile or industrial pursuits." This language, from the representative of a government, which in 1867 passed the "Master and servants' act," and only in 1875 used the term "workingmen" in contradistinction to "servants," proves very thoroughly how the ideas of labor in the United States affected him.

In May, 1867, the workingmen of Chicago made an energetic attempt to establish the eight-hour system in this city and state. The history of the origin, progress, and failure of that movement is in many respects exactly similar to that of more recent efforts in the same direction. The leaders of the movement professed that eight hours' pay for eight hours' work was all that would be demanded; the men insisted on ten hours' pay. Strikes and riots followed. Before the month had elapsed the movement had collapsed; the strikers would have been glad to go to work on the old terms, but many of them were replaced and had to seek work elsewhere.

At that time there were twenty-eight trades unions in the city, and eighteen of these were conjoined in the Trades assembly, which had charge of the movement from the beginning. The Trades assembly's estimate of the number of workingmen then in the city was fifteen thousand. At that time the ironmolders had demonstrated the power of national organization, the result being that trades unions and central organizations got a most exaggerated idea of their own power. The eight-hour law—"eight hours to work, eight hours to play, eight hours to sleep"—had been adopted in one or two trades in England, and was the subject of considerable discussion by the trades unions here. Political agitators took it up on behalf of certain candidates as a means to capture the labor vote. Its first formal recognition in a political platform, however, was in the fall of 1866, when the Cook county convention of the democratic party passed resolutions in favor of the enactment of an eight-hour law. The state convention did likewise, and the stumpers of the party made all the political capital possible out of this plank in their platform during the fall campaign. Republican politicians, not deeming it judicious to be held up as the foes of labor, followed at their state convention with a resolution favoring legislation which would "tend to alleviate the hardships, shorten the hours of labor, and improve the condition of the laboring classes." At the session of the legislature then following (January, 1867) an eight-hour bill was introduced, and subsequently passed both houses, being approved and in force March 5, 1867, in the following form:

Section 1. On and after the 1st day of May, 1867, eight hours of labor between the rising and the setting of the sun, in all mechanical trades, arts and employments, and other classes of labor and service by the day, except in farm employments, shall constitute and be a legal day's work, where there is no special contract or agreement to the contrary. Sec. 2. This act shall not apply to or in any way affect labor or service by the year, month or week; nor shall any person be prevented by anything herein contained from working as many hours over time or extra hours as he or she may agree, and shall not in any sense be held to apply to farm labor.

With confidence in the strength and union of the labor organizations of the city, and with the moral backing of this vague and evasive law, the Trades assembly decided that on and after May 1, eight hours would constitute a full day's work in all branches of labor. Addressing the manufacturers and other employers of labor, they said:

We intend to live up to this principle of eight hours as a day's work, but we are willing to submit to a reduction of wages until we prove that as much can be accomplished in that time as in ten hours, or until the great laws of supply and demand, and the universal adoption of the eight-hour principle will make it reasonable for us to receive more pay. Therefore, on and after May 1, we propose to work faithfully until 4 o'clock, and then quietly lay down our tools and go home. If any employers object and discharge their men, they will have inaugurated the strike and not the men.

The result proved that in thus speaking for the men the Trades assembly made a big mistake, a mistake that was repeated in later years. Except in a few trifling instances the men would not submit to a reduction in wages. They demanded ten hours' pay for eight hours' work, and threatened a general strike if this were refused. It was decided that the movement should be inaugurated with a grand demonstration May 1, including a procession of all the workingmen in the city, and winding up with a mass-meeting on the lake front. Before the arrival of the great day, many employers had formally notified their men that they could not adopt the eight-hour system, and a sort of sporadic strike had broken out all over the city. In a few isolated cases, where employers were to some extent at the mercy of the men, a "nine-for-eight," compromise was effected, and in others the "eight-for-eight" rule was adopted by agreement pending a settlement of the whole business. As a general thing both sides were determined and defiant. May 1, which was to be observed as a general holiday, was looked forward to with great anxiety. Extraordinary preparations were made for the demonstration, and when it came off it was looked upon as a great success. In the procession each branch of labor was attended by great trucks, on which some of the men were at their particular trade. The mass-meeting was attended by fifteen to twenty thousand people, and was addressed by some of the most popular orators of the day, with Mayor John B. Rice, presiding. Resolutions were passed in which, after reciting the fact of the passage of the eight-hour law by the legislature, and also the fact that certain employers of the city had refused to adopt anything but "the hour system," the workingmen of Chicago pledged themselves to "maintain at all hazards the principle that eight hours shall constitute a legal day's work." The resolutions also denounced the high-handed action of employers who proposed to discharge workmen for declining to work more than eight hours per day, and declared the question of wages to be of secondary importance, the workmen only asking an equitable settlement.

Next day the riots began. From one thousand to two thousand men and boys made a tour of the machinshops, planingmills, lumberyards, carshops, railroad depots, and other places of labor in the city, driving out the men at work, in some cases by threats, in others by actual violence. The suddenness of the movement took the employers and authorities by surprise, and the mob did about as it pleased. The rioters were strikers whose demands had been refused, and they claimed they were "only enforcing the eight-hour law." This rioting

and intimidation continued more or less for a week, during which there was an almost total cessation of labor in the city. Incendiary fires became frequent, and threatening notices from unknown sources were showered upon the employers who refused to comply with the demands of the men. The employers had no difficulty in filling the places of strikers, but the new men were subjected to such annoyance and intimidation that it was some time before there was a general resumption of work. About six thousand men quit work April 30. Inside of six days about two thousand had gone back, and probably another thousand the following week. In no case of any consequence did the employers concede the demands of the men, except as a temporary expedient pending a general settlement of the questions at issue. The strikers met in continuous session day after day, appointed "vigilance committees," made speeches and passed resolutions. They defied capital, and professed a willingness to starve rather than give in; they exhorted and threatened and implored and denounced, and had an exciting pow-wow all day long, day after day. But the reporters soon began to make fun of them, and when that stage was reached the strike got its deathblow. They locked the reporters out, but it was too late. Like most agitators they could stand abuse comfortably, but they could not stand ridicule. The timorous who wanted to go back to work lost their timidity and went back—if they got work St. George's hall knew them no more. By June 1 the eight-hour movement had wholly collapsed; the employers had all the help they wanted on their own terms, the old ten-hour system being the rule. The strike was over, but its results remained. More than one thousand men who had struck work April 30 were left idle and penniless. Either their places had been filled by others or the crippled condition of business resulting from the strike left no necessity for their services.

An incident of the strike was the action of the city laborers employed by the board of public works. The board adopted the eight-hour system May 1, and reduced the wages accordingly, as had been demanded. Before a week had passed, the men showed symptoms of discontent, and wanted to know if the city could not pay them ten hours' pay for eight hours' work. This demand was peremptorily refused. Another week passed, and the discontent grew stronger. They must have more wages; therefore they petitioned the board to let them work ten hours for ten hours' pay as before. The petition was acceded to, and the men gladly returned to the old system with its one-fifth larger wages. The experience of these men was the same as that of all others who went to work on the eight-hour system, with wages in proportion; if they could not get ten hours' pay, they wanted the old system back again. The ten hours' pay for eight hours' work was the motive power of the whole movement—if the loss would not fall on the employers, the men would have none of it, all the resolutions in the world to the contrary.

The great organized bodies of mechanics, in the building trades, from the beginning of organization, are the carpenters, bricklayers and stonemasons. The other trades, such as plumbers and painters, may only follow where the greater bodies lead. For this reason, sketches of their associations are given in connection with the chapters devoted to plumbing, iron works and painting, leaving the builders here to represent the labor organizations.

The Carpenters' union antedates the ancient and unsuccessful strike of 1867, which threatened to retard the great building projects of that year; for it was supported by twenty-seven newly organized trades unions and claimed the support of fifteen thousand workmen. The strike and riots of 1877 destroyed the old union by checking its aggressiveness, which showed itself so prominently in 1871. In 1878 the Brotherhood of Carpenters & Joiners was organized, and within a year claimed thirteen branches here. In August, 1881, a great convention was held to devise means for relief and defense. Three years later (1884) the strike for \$3 per day was ordered and two thousand idle carpenters lounged round the streets until the thirteen branches were so deserted as to leave scarcely a decent membership for one branch. Then Union No. 21 was formed from part of the remnants, while Assembly 1307, Knights of Labor, was formed from the other part. Out of No. 1307 grew the Carpenters' assembly 6570, and out of No. 21, a few other branches. To-day there are in the city the United Brotherhood of Carpenters and Joiners, the Amalgamated Society of Carpenters & Joiners, and the Carpenters' assemblies of the Knights of Labor. These three organizations are represented in the Carpenters' council by ninety delegates. There are eighteen Brotherhood unions, seven Amalgamated unions, and three Knights of Labor assemblies. The number of men who are governed by the council is something over six thousand. The number last year was two thousand, and on account of the strike the number was increased to eight thousand. But for various reasons members dropped out, leaving six thousand still in the ranks. Each of the three unions give death and sick benefits. If a member in good standing dies his family is allowed \$100 for funeral expenses. Sick members are allowed \$5 per week during the period of their illness. The qualifications for membership in the Brotherhood union are set forth in Article VI of the constitution, as follows:

Section 1. A candidate to be admitted to beneficial membership in this united brotherhood must be a journeyman carpenter and joiner, engaged at woodwork and competent to command average wages, not less than twenty-one and not more than fifty years of age, except as hereinafter provided, and of good moral character and sound health, and not afflicted with any disease or subject to any complaint likely to endanger life or cause permanent disability.

Sec. 2. Any stairbuilder, millwright, planingmill bench band, or any cabinetmaker engaged at carpenter work, or any carpenter running woodworking machinery, shall be eligible to membership, if possessed of the qualifications as provided in Section 1 of this article.

Sec. 3. Any apprentice or journeyman carpenter and joiner of good moral character, disqualified from beneficial membership, may be admitted as an honorary member, and shall receive an honorary card by paying the initiation fee of the local union, and he shall be entitled to a seat and vote in the union, and to all the working privileges and shall pay not less than ten cents per month as dues.

Sec. 4. No person who has been expelled or suspended from or rejected in any local union of this united brotherhood, or who is in arrears to any local union, shall be eligible to membership in any other local union, except by consent of the local union of which he was a member, or in which he was rejected.

Sec. 5. No member shall lump, subcontract, or work at piece-work for any builder, speculator, or contractor, but may do work by the day, or contract for a friend who is not a builder, speculator, or contractor, and shall employ none but union members, and shall not remain in business longer than three months, without permission from his local union, or by withdrawing from the united brotherhood. For a violation of any part of this section he shall be fined not less than \$10 and not more than \$50, or be expelled from the united brotherhood.

The qualifications for membership in the amalgamated society are: Candidates must be in good health, have worked at the trade five years, be good workmen, of steady habits and good moral character, and not less than twenty or more than forty years of age. No person can be admitted who has acted contrary to the interests of the trade, or who has been excluded from any other society for misconduct until restitution is made or satisfaction given the injured parties; while the qualifications for membership in the Knights of Labor are essentially the same. The officers of the council are: President, J. G. Ogden; vice president, J. H. McCane; secretary, T. J. Howard; treasurer, E. A. Meagher; sergeant-at-arms, Frank Austin.

While every union carpenter owes his first allegiance to one of the three organizations represented in the council, in his conduct as a workman he is governed by the rules of the council. No carpenter can get work in Chicago unless he is a union man. There are many contractors who are enabled to hire men on their merits only, but they are few. When a carpenter comes to the city a stranger, and applies for work to the foreman of some large job, he is immediately approached by the steward, an officer of the union, who asks him if he is a union man. If he is not, he must join some one of the unions before he will be allowed to begin work. The initiation fee is \$5, payable in small installments. The weekly dues of the Amalgamated society are thirty-five cents, the scale of entrance ranging from \$2.63 to \$5.25, according to age. The initiation fee of the Brotherhood union is \$2, while the monthly dues are thirty-five cents. The initiation fee and dues of the Knights of Labor are about the same. On March 8, 1891, the carpenters threatened to repeat their work of April 4, 1890. When the strike of 1890 was ordered there were only eighteen hundred union men paying dues; but the partial success of that strike increased the list by four thousand within a year, and brought at least two thousand foreign sawers under union control.

The Stonemasons & Bricklayers' union, or United Order of American Bricklayers and Stonemasons, was organized February 11, 1879. As early as 1867 an association of members of the two trades was formed, which continued under different names until 1873. In October, 1871, the Bricklayers' union was a tower of strength in the upbuilding of the city. The union refused to countenance a strike for an arbitrary rate of wages and decided to allow the law of supply and demand play its part in regulating such affairs. This did not, however, prevent a marked advance in pay, for contractors, desirous of obtaining men, offered the prices demanded by labor.

On the revival of trade in 1879 reorganization appeared necessary, and, on February 11, that year, a meeting held on the steps of the courthouse resulted in founding the present union. Officers were elected and the initiation fee was fixed at fifteen cents. Before the end of the year thirteen hundred and thirty-eight men had joined the organization, largely through the efforts of the officers: Peter Marr, president; Albert Reick, first vice president, now dead; Henry Nelson, second vice president; A. H. Stowell, secretary; James Hart, financial secretary; William Ray, treasurer. The following April a strike was inaugurated. The cause was the refusal of the bosses to grant twenty-five cents an hour for work. The men were then receiving \$1.50

and \$1.75 for a day's work of ten hours. The strike was successful, and was followed by a large accession to the ranks of the union. In 1881 the union received a proposition from the International union (reorganized), asking the members to become a subordinate branch of the international body. After considerable discussion the proposition was accepted, but the connection with this organization lasted only three years, owing to the fact that the general treasury could not meet the demand in times of financial emergency. About this time the eight-hour movement began. The local union, being strongly in favor of the movement, and seeing that the International union was not likely to secure the establishment of the proposed regime, withdrew in 1884 and became an independent union. The treasury was soon replenished and the union began the fight for the reduction of the hours of work. The eight-hour system was established May 1, 1886, the bricklayers being the only union to gain their point during those troublesome times. For some time previous to May 1, the men had been earning forty cents an hour, or \$4 a day. To establish the eight-hour system they accepted \$3.20 per day, working on this schedule during the year. In 1889 the rate was raised to forty-five cents an hour, and in 1890 to fifty cents, so that the men are now receiving the same pay for eight hours of work that they received previous to 1886 for ten hours. Up to the month of May, 1887, there was peace and harmony between the employers and employed. But at that time the proposition of a Saturday payday was indiscreetly introduced into the meetings of the union, and the result was the precipitation of a strike before a majority of the members had an opportunity of voting. Most of the strikers reconsidered their action a few days after, but such action was not accepted by a portion of the Builders' association, and the strike was continued for some time.

After work was resumed, the union decided to do what has never yet been accomplished by any other labor organization, namely, to purchase a lot and build a labor temple. A lot was purchased at the northwest corner of Peoria and Monroe streets, at a cost of \$10,000, and plans were drawn for a building to cost \$50,000. The union was formed into a stock company, certificates of stock at the rate of \$5 each being issued. Most of the members subscribed, and enough money was soon forthcoming to make the erection of the building feasible. Work began in July, 1888, and the corner stone was placed September 1, 1888. The building was dedicated March 18, 1889. Since that time the union has enjoyed uninterrupted prosperity, and the membership has increased until it now numbers forty-three hundred and twenty-one men. The officers for this year are: President, E. F. Loughlin; German vice president, Fred Reckling; Scandinavian vice president, Charles Olson; recording secretary, H. P. Ward; financial secretary, Ed Healy; corresponding secretary, Peter Rossiter; treasurer, William Ray.

The internal workings of the union are complicated, yet simple, under the system in operation. Every man is subject to the provisions of the constitution, which provides both for his conduct as a workman and his duties to the union. No bricklayer or stonemason can obtain work in Chicago, unless he is a member of the union, or unless he manifests his inten-

tion of becoming a member and pays the initiation fee, \$25. The custom is, when a stranger asks for work, for the collector (the president) to first find out whether the man is able to pay the initiation fee. If not, he pays what he can, say \$10, and gives an order on the paymaster for \$10 of his succeeding week's salary, and \$5 for the next week. After that, he must subscribe \$5 for one share in the stock of the building. There are no other assessments. The building will soon be paid for, so that the bonds which have been issued to the members will be redeemed. In case of the death of a member, the widow receives \$100 and the cost of two carriages at the funeral. Every sick member receives \$5 per week. The following sections of Article IV of the constitution will show what procedure is necessary before a non-union man can obtain work, and also the rules that govern members while at work:

Section 1. It shall be the duty of members when starting on a new job to appoint a steward, whose obligation shall be to examine cards. He, with the members working on the job, shall adjust all complaints and grievances; but if they can not, he shall report the same to the collector. He shall also take charge of any member receiving a serious injury, and notify the union's physician of such case. Sec. 2. Any member who has begun to work on a job after it has been working masons more than two days and finds no steward appointed, shall bring charges against members working on the job, and if the charges be proven the members convicted shall be fined not less than \$2, and member proving the charges shall be paid one day's wages. Sec. 3. If a stranger comes on a job and wishes to become a member, the steward shall telephone, at the cost of this union, during his noon hour, to the collector, notifying him to visit the job and get the necessary deposit. Any steward neglecting his duty shall be subject to censure and a fine of not less than \$5. Sec. 4. Any member failing to respect the steward in the discharge of his duties shall be reported to the union for its action, and such member shall be subject to a censure and a fine of not less than \$5. Sec. 5. It shall be the duty of stewards to examine working cards and permits of fireproof, tile, terra cotta, and stonemasons Monday morning, or any other time, if in their judgment it is necessary, and without inconvenience to the employer. Sec. 6. It shall be the steward's duty to examine all apprentice cards, and see that there are not more than three apprentices in the employ of one contractor, under penalty of a fine not less than \$5, nor more than \$100, and that this union will uphold the stewards in performing their duties. Stewards shall vouch for members getting hurt, and if the steward fails to do so he shall be fined not less than \$100.

The preamble to the constitution reads as follows: "Wealth is power, the truth of which no man, whose daily labor earns his daily bread will for a moment doubt; and experience proves that its possessors have generally used it to degrade and oppress the laborer. In the present organization of society, bricklayers, as well as others, single-handed, are powerless, and may be oppressed with impunity by their more wealthy and combined employers. But united, there is no power of wrong they dare not openly defy. The custom of reducing our wages upon every opportunity that lies in the employer's power, is not only uncalled for, unjust, and wrong, but tyrannical in every sense of the word. So, therefore, it becomes our bounden duty, as workmen having mutual interest—as heads of families depending upon our daily labor for support—to organize, to demand and sustain our rights in defiance of the wealthy few who do not hesitate to take what justly belongs to the laborer to fill their own coffers. In allowing these monstrous wrongs to be heaped upon us, it is very evident that the bricklayers of this city have been recreant to their duties, allowing their employers to reduce their wages at times to whatever they see fit, and tamely submitting, without using the least exertion to maintain their rights. It now becomes them to combine to protect themselves, and be

what God intended they should be—men, endowed with rights that they dare and know how to exercise.”

In March, 1891, this body refused to accept the cards of the International union. This led to negotiations. The International's proposition to admit their members into the Chicago union, at a lower fee than \$25, was not well received. In March, 1891, the Stonecutters' association considered the new proposition of the Employers' association, which read as follows: "The association of employers agrees to employ only union men, and the union shall bind itself to work only for the association bosses. A joint committee on arbitration shall be appointed by the two organizations, to which all disputes shall be referred. Apprentices shall work for four years. If an apprentice leaves his employers before the expiration of his term no other boss shall employ him. All employers employing less than fifteen men shall be entitled to two apprentices; those who employ more, to four. The wages shall be determined in the first week of January each year, and be in force for a year from March 1. The union shall not be permitted to discipline an employer for any reason whatever." To this last provision the eight hundred employes objected, and a strike was threatened; but the employers were wise enough to conceive the injustice of their claim and to remove the objectionable provision in time to prevent a strike.

The plasterers and lathers of the city exceed sixteen hundred in number, and over half hold membership in the Plasterers' union. In April, 1891, there were eight hundred men in the union, the treasury was full, and the International union stood ready to render aid in case the demands for \$4 per day of the Chicago union, made in February, 1891, should not be acceded to. In the fall of 1889 a similar demand was met by the employers, who added fifty cents to the day's pay, and continued to pay \$4 during the ensuing winter; but in the spring of 1890, owing to the presence of a large number of foreign or non-union workmen, the general dullness of trade, and the partial dissolution of the union, the old rate of \$3.50 per day was substituted. The employers received the new demand and decided at once to oppose it. Secretary Corcoran, speaking on the subject, said: "The plastering business is ruined in Chicago. Eight years ago we paid \$4 a day for ten hours' work. Then it ran down so low that many workmen became bosses, as there was more money in bossing than in working. They became rich, but as prices advanced they became workmen again. I know a south side boss who has in his employ eight ex-bosses. The fact of the carpenters apparently being about to strike cuts no figure in our refusal to grant the advance demanded. No, we are not hiding behind the boss carpenters. We can not afford to pay such wages at the present prices." Following this announcement a contracting plasterer moved that each boss or firm pay into a fund, to be set aside for the purpose of transportation expenses of mechanics from other states and Canada, one-half of one per cent. of their actual assets, both real and personal. This motion was unanimously carried, and it was then moved that the bosses present give an approximate estimate of their assets, real and personal, so that the assessment could be made to the satisfaction of all contractors who might wish to schedule for the purpose mentioned in the reso-

lution. This was agreed to, and thirteen bosses scheduled for \$145,000, eleven for \$90,000, fifteen for \$40,000, nine for \$5,000, and seven for \$3,000. The secretary was then instructed to figure out the amount due from each according to the assessment proposed, and hand a bill to every man, in order that at the next meeting a check for the amount might be handed in. This was done. It was found that thirteen members would have to pay \$725 each, eleven \$450 each, fifteen \$200, nine \$25, and seven \$15 each, making a total of \$17,705. This was an effectual attempt at war, and had the effect of bringing eight hundred men to reasonable terms.

The Architectural Ironworkers' union was organized in 1890, with H. J. Gates, president; Thomas Lynch, vice president; A. C. Boyd, financial secretary; Robert Harker, recorder; John Shaker, treasurer, and F. C. Dorn, inspector. The necessity for such an association became apparent during the work of constructing the Leiter building on State and Van Buren streets, for the workers were paid small wages for long hours. The effects of organization were manifest within a year. The easiest victory won in 1891 in local labor circles was that achieved in May by those ironworkers. Organized less than a year ago, the union numbers now nine hundred men. The five largest firms in the city signed the agreement presented them by the union, and the men were jubilant over securing their terms without resorting to a strike. The conceding firms are the George A. Fuller Company, Woolf, McCain, Gottlieb & Co., and McBeth & Co. The terms secured are eight hours, a minimum wage rate of twenty-seven and a half cents an hour, instead of ten hours at twenty-two cents per hour, time and a half for overtime, double time for Sundays and holidays, and a concession that no workman shall be discharged until due notice has been given him. This victory is due to the fact that the union was backed by the powerful Building Trades' council, and to the work of the conservative president of the union, F. C. Dorn.

Next to the Carpenters' union, the Metal Cornice Workers' union is the most aggressive body of tradesmen in the city. Of the seven or eight hundred molders and hammerers of ornamental cornices, little less than four hundred belong to the union. Early in the history of the Knights of Labor, the cornicemakers joined the tanners in Assembly No. 6018, Knights of Labor, and remained members until 1886, when they made the beginnings of the present union, and joined in the ineffectual strike for an eight-hour day, and ten hours' pay. For over a year disorganization ruled; but in 1887 a union was effected, which, before the beginning of 1888, boasted of two hundred and twenty-five members. In 1889 the number was four hundred, increased to five hundred in 1890, but reduced to three hundred and seventy-five in 1891. In 1890, shortly before May 1, the union sent a communication to the bosses asking them to adopt an eight-hour schedule, to take effect May 1. Most of the fifty shops refused, only five granting the demand. A strike was the result. An appeal was sent out to the non-union cornicemakers, asking them to join the union. July 1, 1890, the membership had increased to five hundred. A demand was then made for forty cents an hour minimum, with price and a half pay for overtime. By December 1, thirty shops had signed the agreement. At the time of the demand the union had appointed an arbitration committee, but the

bosses objected to certain clauses in the circular, and would not meet the union on the same ground. The union then issued a circular to the architects, offering further concessions, but their advances did not meet with the approval of the bosses. Further offers made by the union to submit the troubles to arbitration, were met by a refusal, and the strike was continued. On February 1, 1891, the union joined the International union, which affiliation it is expected will materially strengthen it this spring. The objects of the organization are to elevate the trade from a low grade among the mechanical crafts, to provide an apprentice system, to encourage a high standard of skill, to cultivate a feeling of friendship among the mechanics, to settle all difficulties that may from time to time arise between employer and employed by arbitration, to reduce the hours of labor, to secure adequate pay for labor, and by legal and proper means to elevate the temporal and social condition of the members. There are very few cornice shops in the city in which a workman can get employment unless he is a union man. The initiation fee is \$25, \$5 of which must be paid before a permit card will be issued. The remainder of the fee is paid in installments of \$2.50 per week, while the new man is working. The monthly dues are twenty-five cents. If a member dies his nearest relative receives \$100 as a funeral benefit. A \$5 weekly accident benefit is paid to members in good standing.

There must be laborers and drones in every community. The laws of nature sanction this. The drone exists on the same principle as the rat, and the incautious laborer sinks in time to the level of the drone. Life is a serious battle for the great majority, in which the strongest succeed, except in rare instances, where chance or villainy places the unworthy at the front.

One of the chief hindrances to the prosperity of the laborers and to the improvement of their condition, is their ignorance of economic matters and the mistakes they often make in them. Economic laws and theories are not considered so much as the practical conduct of life in its economic aspects, a matter in which theoretical knowledge is of subordinate importance. It is not to be expected that men so imperfectly educated as are the laboring masses, and with so little leisure and spare energy as they have, should be able to give much study to the laws of wealth; but there is no reason why they should not manage their own business affairs with more prudence than some of them now show. Want of skill and prudence in making purchases, and mistakes in regard to wages, are common among them, and have a tendency to prolong and intensify their poverty. Every man in a civilized community is obliged to trade, to exchange his goods and services for those of others, since every man can produce but a small part of what he needs. It is important, therefore, for everybody to make such exchanges wisely, so as to purchase what he wants at the smallest cost, and sell his own services to the best advantage. Exceptional skill in this direction is the special qualification of the successful business man, and those who are lacking in such skill are sure to be less prosperous than their neighbors. Moreover, such skill and prudence are specially important for the poor, for, though a rich man may continue prosperous, notwithstanding blunders and losses, a man born to poverty can seldom rise to a better condition without care and wisdom in the management of his affairs.

The mistakes of the laborers in practical economy are frequent and of various kinds; and, first, in making their purchases. Their means are so small that they can illy afford to spend even a portion of them imprudently, and yet they very often do so. They are apt, for instance, to purchase goods in very small quantities, when they could buy in larger amounts at a reduced rate. Some things, of course, must necessarily be purchased in small quantities, because they will not keep well, but many of the things that a man requires for his table or for other purposes can just as well be bought in larger amounts, and if so bought they can usually be got at a considerable reduction in price. Again, the poor are too much in the habit of buying goods on trust, when exertion and forethought would enable them to buy for cash, and make a further saving in that way. Moreover, their want of knowledge of commercial affairs and inattention to the course of prices prevent them from taking advantage of the state of the market, as they might sometimes do, so as to buy what they need at the lowest price. It may be said that the mass of the poor have not the means to buy in large quantities, or to buy always for cash and to take advantage of the fluctuations in price; and to a certain extent this is true. Yet it would be easy, in most cases, for them to get together a sufficient sum to make a beginning in these matters, and, once begun, the practice could more easily be continued. Many of them, indeed, are already alive to the advantages that may thus be gained, and are shrewd and economical in all their purchases; but many others are either ignorant or heedless of such things, and thus miss the opportunity of making many a small saving. Besides these mistakes of a strictly economical character, there are others of a different kind into which the poor are apt to fall in the use of their means, though not the poor alone. One of them is the purchase of inferior goods, or shabby imitations, when a genuine article, even of a lower grade, would be more satisfactory, as well as cheaper. Then, large sums in the aggregate are spent for articles of ornament that are not ornamental, and for vulgar amusements and other things of little or no real value; vast sums are wasted on liquors and other things that are positively injurious; but all these habits and practices are rather to be condemned from a moral and æsthetic point of view than from the purely economical, bad as their economical effects undoubtedly are. The misuse of liquor blunts the intellect and leads to mistakes which sometimes require the efforts of years to correct.

Such are some of the economical mistakes of the poor in the employment of their means; but those of them that work for pay, who are the great majority, make mistakes of another kind on the subject of wages. Every friend of humanity must wish that the earnings of the laborer might be increased, but the means they often employ to effect such an increase seem little likely to attain their object. The general policy of strikes and trades unions, or the question of their justification from a moral point of view do not affect this question. But attention to the lack of economic knowledge and the mistakes in economic policy, which their leaders so abundantly display should be noticed. One would think that if men were going to seek an increase of wages, they would take care to do it when the condition of the market was favorable to the success of their attempt. Yet nothing is more common than for the managers of a trades union to order a strike when trade is dull, the price of goods falling,

and the market, perhaps, filled with unemployed labor. Under such circumstances the attempt to raise wages is necessarily a failure; while, if proper care was used to take advantage of the market, an increase of pay might often be obtained without any struggle at all. But there is a further mistake into which laborers are apt to fall on this subject of wages: they often entertain extravagant ideas as to the extent to which wages can be raised. One would think from the talk in which some of them indulge, and from the reckless manner in which they order strikes, that they thought almost any rate could be obtained if sufficient pressure were brought to bear. Yet a little attention to the conditions of business, to commercial history, and to the state of the market at a given time, would show that any great and sudden increase of wages was out of the question. Such increase as is possible will result in part from the general moral and intellectual improvement of the laborer himself, and of his special skill as a workman, and in part from taking advantage of the various markets and of the times and seasons, so as to get the highest rate obtainable in each particular case.

Besides the mistakes above mentioned, to which the mass of the laborers are liable, there are others, to which those of their number are exposed who attempt to do business on their own account. Men born in narrow circumstances have seldom much chance in early life to learn the management of business; and they need therefore, to be specially careful in undertaking it. Yet they are very apt to enter upon it without sufficient attention to its conditions, and without the amount of capital which the business requires. Every year a multitude of small capitalists are thus wrecked; and in the majority of cases their failure is due to mistakes and imprudences which a little more care and forethought might have prevented. Doubtless one cause of such failures is the passion for great and sudden gains; a passion that afflicts multitudes in our time, and has caused the ruin of many rich men no less than of many poor. But whatever may be the cause of failure in any particular case, the result is much to be regretted, since an increase in the number of small capitalists is greatly to be desired. What is the remedy? For the purchase of goods by the poor, it has been proposed that coöperative stores should be established, so as to save for the purchasers the profit they now pay to the retail dealer. That such stores, when well conducted, are highly beneficial, there can be no doubt; but for some reason or other most enterprises of this sort in America have proved unsuccessful. On the subject of wages our native American laborers have not, as a rule, been so widely mistaken as foreign laborers and those of foreign birth; and experience will in time, no doubt, lead to more correct views and wiser methods. The general education of the poor, bringing with it more thoughtfulness and foresight, must also, in the course of time, lead to greater knowledge of economic subjects and better methods of management.

There was printed in the *Inland Architect* of December, 1890, a paper by C. Kehr, on "The duties of employes," which tells of the results of study and experience in dealing with this serious question. He says: "It may be noted that employes are persons who work for others and receive pay therefor. It is to be borne in mind that our people are not all either employes or employers. Many are neither. The festive tramp, the burglar, and

the swindler live without hiring or being hired. So do many small manufacturers and many tillers of the soil. So do many business people. It is also to be observed that the employes of this country are not all poor and the employers are not all rich. In common with the rest of mankind, employes imagine that they have less advantage and more burdens than other people have. Sharing in this weakness, the employe is by nature led to feel that the man for whom he works has privileges and pleasures and freedom from vexations to a greater degree than he may ever hope to attain, while the fact may be that the employe has little responsibility and worry or hardship in comparison with what the employer must face.

“Unconsciously taking this view, the employe is prepared to give ear and attention to anything in the nature of a murmuring regarding his own lot or any arraignment of the methods of his employer. Some employes make the mistake of asking their brother man to divide his worldly goods with them while they are not willing to divide with him. Who ever knew of an advocate of equal division of property who had any property and was willing to divide it with others? Another mistake made by employes is their inclination to cling to large cities. Thousands stay in large cities where they receive small salaries, live in poor quarters, and breathe the poisoned atmosphere. The large city has a peculiar fascination for these people, and many can not be induced to leave although they live in sections of the city in which poverty and discomfort prevail. There are manufacturers who would like to move their establishments from Chicago to country towns, but can not do so because they could not there secure the necessary employes. Manufacturers have told me that if they should move their plants to a country town and offer to take their employes along and pay them increased wages, and at the same time give them an opportunity to live more comfortably and more cheaply, they could get but a few to go. They will not leave the hum of the multitude.

“Many employes make the mistake of not exerting themselves to attain better qualifications in the line of their occupation. There is a great surplus of unskilled men. Let a vacancy in almost any occupation be announced, and there will be numerous applications by men who are totally unfit for the position. Frequently employers must try a large number of men for a position requiring only moderate skill before a satisfactory person is found. I have often known of employers who were looking for days and weeks for a suitable employe, while numerous men were seeking the place but could not be taken, because they lacked the necessary skill. The employe should strive to acquire such skill as will make him indispensable to his employer. A man who is thoroughly skilled in any trade or calling need seldom be idle. Instead of making this effort to thoroughly master their occupations, many stop when they have learned barely enough to place themselves on a pay-roll, and all they do thereafter in relation to the acquiring of skill in their line of occupation is to formulate and try to enforce rules calculated to bar others from learning and entering their calling. Only the other day there came to my notice the case of a young man who has barely learned the rudiments of an occupation which affords opportunity for almost unlimited expansion in skill, and he is content with the little he has learned and has joined a union whose chief rule

requires all members to hinder others from learning and entering their occupation. They lack the ambition to ascend to a higher plane, and have arranged themselves in picket line for the purpose of preventing others from doing so.

“The employe often makes the mistake of not conceding to the employer a margin for the risks necessarily assumed by the latter in his business. The employe who receives \$2 a day knows exactly the amount of his income, but few employers have a constant income. The manufacturer, for example, may, during the course of a year, realize a considerable net sum, or the year’s business may result in a loss. To meet the latter, he must have a capital, and to compensate for losses, he must reckon for a margin of profit larger than would be required were the losses at the minimum from year to year. Many manufacturers are wrecked, because they do not make proper allowance for stagnation in sales and extra losses and expenses. I know a carpenter who might be a contractor and employer of a large number of men, but he prefers to work for the definite and constant wages which his skill commands, and invest the surplus of earnings, and let others assume the business risks. A mistake is also made in assuming that the people of this country are permanently divided into two classes, the exalted or rich, and the humble or poor, separated by an impassable barrier. This country is not the home of caste. The poverty stricken are comparatively few. The restless are few, but seem many because of their constant and loud talking. The many thousands who work soberly and steadily, and gradually acquire comforts, if not a competency, are out of notice, because they make so little tumult. Instead of being confined by caste, the poorest may become the richest; those of humble station may rise to the places of greatest honor; the railsplitter, the tanner or the canal boy may here become the greatest among us, and greater than a king. A most serious and criminal mistake made by employes is in undertaking to control the actions of their fellows. This is a direct and dangerous attack upon the liberty which our government seeks to secure to all. The people of the thirteen colonies announced and enforced recognition of the right of self-government. They shattered one of the strongest bonds of tyranny. But, while they freed themselves from monarchy, they left human slavery undisturbed. While they established the principle that a man need not do the bidding of a king, they did not deal with the holding of one man by another as a chattel and a beast of toil and burden.

“During many years the country was concerned in the effort to solve this feature of the problem of liberty. After trying a large number of the expedients, and attempting to establish all manner of unsatisfactory and untenable doctrines relating to this subject, this country, by an effort that shook the world, announced that one man must not be allowed to compel another to work for him. But full liberty is to be attained step by step. After the lapse of a quarter of a century, we find that the employes of this country, they who should be foremost in their zeal to promote liberty, have made the mistake of developing a violation of liberty, which, in magnitude and seriousness, rivals the slavery of our former years. Indeed, this later violation of liberty is the counterpart of human slavery. Slavery disappeared from our land when we established that, ‘one man must not be allowed to compel another to work

for him.' The counterpart of this is, 'a man must be allowed to work, if he have a task.' Could anything be more simple and self-evident? And yet this principle is frequently violated.

"If your neighbor undertakes to paint or mend his house or build him a stable with his own hands, who has a right to club or stone him? Yet this has been done in the proudest of our forty-four states. If you bargain with your neighbor to lay a wall, or build, or repair a house, who has a right to waylay or terrorize him? The principle is the same whether you are building one or a hundred houses. If you have bargained with a man to cut for him four cords of wood at a price that is satisfactory to you and to him, and you are engaged at the work in order to earn bread for your wife and children, who has a right to force you from your work? The principle is the same if there are four hundred cords of wood. If you bargain with the owner to operate a machine on certain terms, who has a right to stand at the door of the shop and murder you? Is the principle any different if there are a hundred machines and a hundred men? What right have men who are dissatisfied with their employments to drive a stranger from a porch he is building to his own house, and then tear the porch down? What right have men who have left their own work to murder a peaceable old man building his own house?

"Nine years ago I met upon a street in Chicago a man who was covered with blood from head to foot. He was dazed and hardly able to walk. He said he had been working on a dock, and suddenly a number of men came and stoned and clubbed him; that he did not know he was doing anything wrong; that he had the chance to work and wanted to earn the money. No sect or class of people worked more earnestly for the abolition of human slavery than did the Quakers. There are now living three Quaker sons who have suffered outrages as painful, as protracted, as the early settlers of Massachusetts inflicted on their political and religious opponents. Each one was seriously injured, and has now physical defects and ailments resulting from such assaults. Nor is this wrong limited to the sons. The mother is in constant fear that these persecutions may end in murder. But, some one may say, 'all this is done in effort to improve the condition of the laboring man.' May one employe be allowed to improve his condition by wronging some other person? As you would not be made to work against your will, so do not prevent another from working if he chooses to work."

The strike of 1877 was of short duration. It was a revolution, in fact, which required the presence of United States' troops and the use of cannon to quell. The shades of the panic were still over the city when this unfortunate leap into idleness was made by the tradesmen and laborers. Workshops, mills, factories and foundries were cleared of employes by the vigilant walking delegate, and it looked as if anarchy had snatched the scepter from the state. They were dark days for Chicago. On Twelfth street meetings were held nightly under the red banners of the International society, and a false cry for bread rang through the city. There was little remunerative work to be had, but of that little the agitator did not care to share, and hence he resorted to the easy task of urging the industrious to rebellion. The trials of the period will never be forgotten. The wealthy and the poor were

equally solicitous for to-morrow until the United States troops appeared upon the scene. The Carpenters' union decreed on April 3, 1887, that no union carpenter be allowed to work until the demand for an eight-hour day and thirty-five cents pay per hour should be acceded to by the employers. There were six thousand idle carpenters observing the decree the next morning. On April 10 the Knights of Labor assembled to discuss the question of asking the carpenters to return to their benches at thirty cents an hour; but the good offices of the Knights were ignored. On the same date the employers met and instructed the secretary to notify all carpenters who were willing to work at thirty cents per hour to be at work on Monday morning. Simultaneously the following notice was issued:

"As a notice has been circulated to-day among the master carpenters of this city, calling a meeting of the master carpenters for this afternoon, we would respectfully ask you to publish the fact that this meeting is in no way authorized by the Master Carpenters' association, and we will not in any way voice its sentiments or recognize its action. Also, that this association will hold no meetings, except those authorized by the president or secretary of the executive committee. We would also like to make public the fact that there are now one-hundred and seventy-five members in this association, and they represent about seven-eighths of the carpenters in the city. Because incorrect reports are apt to be published, and the public interests will suffer if this occurs, we would be glad to receive reporters at all meetings and place all information in our possession at their disposal. An erroneous idea of the present situation or cause of disagreement exists, not through the fault of the press, but rather through an inaccuracy in presenting the matter. What we would lay down as our statement of principles is the following, which were formulated as a part of those adopted by the National Association of Builders:

"This association affirms that absolute personal independence of the individual to work or not to work, to employ or not to employ, is a fundamental principle which should never be questioned or assailed; that upon it depends the security of our whole social fabric and business prosperity, and that employers and workmen are equally interested in its defense and preservation. While upholding this principle as an essential safeguard for all concerned, this association would appeal to all employers in the building trades to recognize that there are many opportunities for good in associations of workmen, and, while condemning and opposing improper action upon their part, they should aid and assist them in all just and honorable purposes; that while upon fundamental principles it would be useless to confer and arbitrate, there are still many points upon which conferences and arbitrations are perfectly right and proper, and that upon such points it is a manifest duty to take advantage of the opportunities afforded by associations to confer together, to the end that strikes, lockouts, and other disturbances may be prevented.

"When such conferences are entered into, care should be taken to state clearly in advance that this fundamental principle must be maintained, and that such conferences should only be competent to report results in the form of resolutions of recommendation to the individuals composing the various organizations participating, avoiding all forms of dictatorial

authority. The present question is not one of wages or hours, but is solely upon our recognition of the union and our acceptance of the conditions proposed by the letter received from the Carpenters' union at the meeting of this association Saturday night and printed last week. As our code of principles state, we do not oppose unions, as we affirm the right of all individuals to form associations. This body has received but one communication—that referred to—and that a week after all the carpenters in the union had struck work. This communication purported to be from the executive committee of the Carpenters' union, but there was neither seal nor letter press on the stationery, and there were no names representing the executive committee. This association means to treat the present disagreement with all fairness, recognizing the entire rights of the journeyman, but claim that we, as contractors, have rights as well."

The conciliatory circular of the "Boss Carpenters' association," as the new association was known, did not effect an amicable settlement, and the strike continued. On April 14, 1887, the Carpenters' council formulated the following agreement for presentation to the master carpenters:

"We, the undersigned contracting carpenters, agree to the following terms of settlement, and pledge ourselves to the following propositions, which shall be in force and binding upon us from this date until the 1st day of April, 1888, with the understanding that the Carpenters' council pledges that there shall not be another demand for increase of wages or reduction of hours before said date—April 1, 1888. First. We agree to pay as the minimum rate of wages to carpenters thirty-five cents per hour. Second. We agree that eight hours shall constitute a day's work. Third. We reserve the right to employ men of our own selection and to discharge anyone for reasons of incompetency, intemperance, or disorderly conduct, and we will cooperate with the Carpenters' council in all their efforts to elevate the mechanical and moral standard of the craft. Fourth. We indorse the principle of arbitration as preferable to strikes, and will cooperate with the Carpenters' council for the establishment of a board of arbitration. Fifth. The probable number of men each of us will require, at once on resumption of work is set opposite our respective names."

This was answered by the Carpenters & Builders' association in the following:

"That the master carpenters will, as a preliminary to any negotiations with the carpenters now on strike, require that the men now on strike without notice to their employers agree to resume work at the following scale of wages, to be agreed to by employer and employes, viz.: Eight hours to constitute a day's labor, the wages to be thirty cents an hour and upward. That the master carpenters lay down the following rules as a declaration of principles as the unquestionable rights of employers and employes, upon which there can be no arbitration or question. These rights to be conceded by both parties before any further action is taken looking toward a final settlement of differences for the future: First. The right of the employer to employ and discharge employes whether belonging to carpenters' unions or not. Second. The right of the employe to work or not to work with non-union men. Third. The right of the employer to hire unskilled labor that will best suit his

purpose at any price at which he can get it. Fourth. The right of the employe to get the wages he demands or not to work. Fifth. The right of individuals to associate for all honorable purposes."

On Friday, April 15, the executive council replied to the action of the carpenters and builders in the following ultimatum: "We will agree with Rule No. 1 in your document if the words 'the right to discharge rests in and is confined to the individual employer and not the associated employers,' were added. And you understand that under your own rule, No. 2, union men would have a right to refuse to work with non-union men, and to quit any job where such were employed, unless they were discharged when the request was made. Rule No. 3 must have the words: 'But no unskilled man shall be allowed to do work which properly belongs to the trade of carpentering, or which necessitates the use of carpenters' tools,' before we can accept it. The other rules in your document are immaterial and do not need review. Now, for a few words. We will state the terms upon which the journeyman carpenters of this city will return at once to work. There must be an agreement made and signed by the contractors, individually or collectively, through an authorized committee, and signed by the executive committee of the United Carpenters' council on the part of the journeymen, and in addition to the two rules given as amended the following: The minimum rate of wages paid to journeymen carpenters shall be thirty-five cents per hour. Eight hours shall constitute a working day; overtime shall be paid as time and a half, and double time for Sunday work. There shall be an arbitration board for the settling of grievances. The agreement shall be in force until the 1st day of April, 1888, and notices of desired changes at that time must be given by the party so desiring to the other party to the agreement on or before March 15, 1888. Hoping you will look at this communication from a business as well as humanitarian standpoint, and that you will keep in mind the fact that we are as desirous as you can possibly be of ending the strike, and that nothing is here set down in malice, every word being uttered in the spirit of harmony and justice."

The Carpenters & Builders' association replied through its executive committee, that no deviation from the report made would be tolerated; but on April 16, addressed the strikers thus: "Believing that the great majority of you are fair and honorable, the executive committee of the master carpenters take this means to address an appeal to you, as we believe you can not be reached in any other way, plainly, calmly, and without a coating of socialistic ideas being spread over by your so-called leaders, whose business it is to be agitators and disturbers of our mutual interests, and whose occupation would be gone if they could not find a constituency gullible enough to listen to and support them. It is impossible to say how much farther we would be advanced in material prosperity in this free country if we were free from the antagonistic feeling caused by this class of agitators, who are really out of their element here, and should be confined to the source of the oppression of labor, on the ground and among the institutions which support class distinction. Now we are all workers with you, our business is not speaking or writing, and we venture to say that nineteenth-twentieths of the men who employ you started in from your body, and did not get where they

are by listening to or following these imported ideas, but did the work they found to do, made the most of their opportunities, and we hope the same course will be left open to yourselves, and that the same spring will furnish more of the same stock, and that, notwithstanding the foothold these perverted maxims (each for all and all for each) have gained among us, in the long run, our plain judgment will lead us away from them, and each will make his own endeavor to rise as high as his opportunities will allow him, and by doing so will stimulate his brother to follow in his footsteps. Is not this better than 'each for all and all for each,' which will load you down heavier than you can bear, so that none can rise, and a class will have to be furnished from some source to employ you who will surely not have your interests more at heart, and, in that event, we would be back again to whence we sprung from, or some other, where we can not tell. You surely will not be improved in your condition by wasting your time in contending with your employer for more than there is in existence to give you, for he can not give you what he has not nor can he give you wasted time nor the advance he has offered without risking a present loss in the hope of being able in the future to gradually increase the cost of production to cover this outlay. Men, go to work; form associations if you will; better your condition by that means if you can; but do not risk the driving away from this fair city that which supports you, nor listen, except to learn, to those born contenders who have no other gifts than 'gab' * * * * Boys, this advice is from a committee of five, who got every cent they possess from hard knocks, and the work of their own hands and brains." This was signed by S. H. Dempsey, J. W. Woodward, Jonathan Clark, Francisco Blair and John Rameke.

This address brought the strikers to their senses, and following came the address from the executive committee of the United Carpenters' council, and on April 18, 1887, over four thousand carpenters resumed work. The address is as follows: "Brothers, you are ordered to report to your various jobs Monday at 8 a. m. and if your employer accedes to your demands for eight hours a day and thirty-five cents an hour, go to work, but on no account are you to work if your demands are not granted, neither will you work with scabs. You will make it your duty to see that every man has the working card issued by the United Carpenters' council for the months of April, May and June, and consider as a scab anyone who is not in possession of one. If your employer objects to the conditions do not stop to argue the question, but immediately report to headquarters. Some of you may not work the first nor the second day, but we will, without fail, win this battle if you follow instructions. Every brother in distress shall be assisted, and we pledge ourselves that not one of you shall want if only brought to our notice. Carefully take note of all jobs working more than eight hours, or employing scabs, and report to your headquarters; also any boss who defrauds brothers of their pay, with evidence necessary for prosecution. It shall be the duty of every man, especially foremen, to bring all influence they can to bear on their employers to induce them to join the new builders' association. Now, brothers, with joy we say to you go to work. You will get your demands. And we beseech you not to work for less. If you do, you will be found out. There are enough to watch those who will not do their duty, and you must be subject to a call when it is necessary."

The great lockout of 1887 occasioned much suffering and disappointment; the direct loss of about \$5,000,000 to the persons of the drama and an indirect loss of about \$20,000,000 to the community or audience; for the uncertainty of labor and its exorbitant demands deterred the would-be investors of that amount of capital from investing it here that year. On April 29, 1887, the Bricklayers' union demanded their pay on Saturday, every two weeks, instead of on Tuesday, as had been customary. On May 5, the master masons, having had sufficient time for consideration, refused the demand, and a combination of all building trades, dealers and manufacturers of building material having been formed, the lockout was immediately instituted and continued up to July 9, 1887, when the arbitration committee submitted a plan of settlement between the union and master masons' association. The employers of labor were thoroughly organized. They were, in fact, in the position of united Germany when France cast down the gauntlet of war in 1870. Labor, on the contrary, was under several distinct heads like the French army of 1871, and like it, fell before the more complete organization.

In April, 1887, the Amalgamated Council of Building Trades was organized here. The associations of stonecutters, carpenters, painters, plasterers, derrickmen, hodcarriers, steam-fitters, lathers and gasfitters, galvanized iron and cornice workers, slaters and stairbuilders entered the council first; followed by other organizations. The object was to centralize the efforts of various societies. When any branch represented desired to make a demand for an increase of wages or a decrease of hours, such demand could be submitted to the council, and, if approved by a two-thirds vote, it was binding. Any branch could act on its own responsibility. A constitution and set of by-laws was adopted, and the following named officers were elected: Edmund Bates, of 291 West Randolph street, a carpenter, was elected recording and corresponding secretary; Vincent Carroll, a stonecutter, of 2801 La Salle street, was elected treasurer, and John Woodman, a stonecutter, of 80 West Eleventh street, sergeant-at-arms.

As related in pages 339-344, the employers had guarded against the possibility of a strike, and exactly one month before the strike was inaugurated, completed its organization of the national association. The "lockout" was inaugurated May 6, 1877, when Joseph Downey, president of the Master Masons' association issued the following circular:

To the Architects of Chicago—Gentlemen: Owing to incessant and unreasonable demands being made upon us from time to time by our employes, causing incalculable delays, which means disaster to those signing time contracts, the members of this association have, therefore, unanimously agreed to sign no contracts after May 1, unless the words "except in case of strikes or epidemics" are inserted in the time clause.

This was one of the results not anticipated by the Amalgamated Council of Building Trades on April 23, when that body decreed that the united strength of all organizations represented in the council would be used to compel non-union men to act the same as members of the organization representing their trades. On May 2 the Hodcarriers & Laborers' association ordered a strike. Four thousand hodcarriers "went out." A week later the bricklayers' demand for pay on Saturday was answered by Joseph Downey as follows:

To the United Order of American Bricklayers—Gentlemen: It has come to the knowledge of the Master Masons & Builders' association that at your last meeting you passed a resolution that the members of your union should hereafter be paid on Saturday, instead of Monday and Tuesday, as is now and has been the custom. There has been no official action by the Master Masons & Builders' association, but I have conferred with a number of them, and am impelled to write this letter to notify you of the fact that while we might prefer to comply with your request, we find it will be impossible to make up our pay-rolls in time to pay on Saturday, especially in the busy season, when some of us have from two hundred to three hundred men employed. We trust, gentlemen, that you will reconsider the action taken which resulted in the adoption of the resolution mentioned, as we are particularly anxious that the good feeling which has prevailed between your union and our association shall be continued without interruption.

On May 9 a few hundred bricklayers laid down their trowels, but returned to work on learning that the action was premature. On May 10, 1887, the following report was presented to the Master Masons' association:

"Your executive committee does respectfully report that a committee of three, claiming to be appointed by and to represent the Amalgamated Trades council, and to be clothed by it with power to settle the existing laborers' strike, did call by appointment this morning at the exchange, and met us, together with a number of members of this association, whom we asked to join us for this particular purpose. After quite a lengthy and exhaustive discussion of the situation, said committee of three insisted: Firstly, on the establishment of a minimum rate of wages for all masons' laborers at twenty-three and one-half cents per hour. Secondly, one time and one-half to be granted for all work done over and above eight hours per day, no matter during which hours such work may be performed. Thirdly, for double pay for Sunday work, and lastly, on the recognition of their union. The first three propositions are debatable, and might have been acceded to by your committee and this body, and if the fourth had been understood to mean an acknowledgment of the fact that a union of masons' laborers, more or less numerous, has been formed, and is now in existence, your committee would have been ready to go to that length. But the gentlemen wanted more—far more. They informed us that a recognition of their union means that the members of this association pledge themselves to employ henceforth none but laborers belonging to their union, to grant to it the practical control of the labor market, and to drive every laborer now employed from our buildings, and in reality out of the city all who have not now, or do not in near future, join the ranks of their union. In other words, to make ourselves the whippersin of said union. It means that we sanction and support the aim and object of said union, which is that none shall work in Chicago at their calling except upon surrender of his manhood into its keeping and at its beck and call. It means that we sanction the employment of brute force to coerce men into their ranks. It means that we sanction and approve of the outrages committed daily against men now at work upon terms mutually satisfactory to themselves and their employers. We, the members of this association, must plead guilty, in common with the entire community, to suffering the fundamental principles underlying the very fabric of our government, and guaranteed by our constitution—principles called inalienable rights of man—to be overridden and practically abrogated by lawless bodies throughout the land. Thus far are we equally guilty with all other citizens in neglecting our duty as such. To uphold this

government and constitution is the duty of all citizens. We are part of this community, and comparatively a small fraction. This community will awake from its lethargy and to its duty when that time comes, and God speed the coming. The voice of this association will give no uncertain sound. In the meantime, let us never voluntarily do or sanction wrong. We may suffer, but we can not cope against it without the active support of the community. But never let it be said that we approved of the methods employed recently by trades unions. Your committee would not make you liable to such charge by its act, and reports the whole matter to you for final action."

This was signed by Joseph Downey, H. Mueller, G. C. Prussing, George Tapper and C. P. Wakeman. The answer was the strike of two thousand bricklayers on May 11, against the orders of the union, because employers would not agree instantly to make Saturday the payday.

The trades represented in the Builders' exchange sustained the action of the master masons. President Downey requested contractors to stop work on May 13; the brick manufacturers closed their yards on the 18th, and other employers of labor followed this example. This form of reciprocity led to disorganization in the ranks of labor, and uneducated men who desired to obtain sixteen hours' pay for eight hours' work looked askance at each other, realizing that the course of the leaders was far from the road leading to success. A great meeting of contractors was held on May 14, 1887, when the following action was taken:

"The members of the Builders & Traders' exchange, of Chicago, in special meeting assembled, in their capacity as citizens and as employers of labor, believe the time ripe to protest against the arrogant interference of labor organizations with business and the rights of man as guaranteed by the constitution of the United States. From year to year this evil of foreign importation has grown worse and worse, because the people, whose duty as citizens it is to uphold and enforce the laws, have not taken the time to oppose actively the aggressions and outrages committed in the name and by the instigation of the various labor organizations. We have seen this evil brought to and planted in our soil; we have allowed it to sprout and grow, and put forth new and stronger shoots every year, until now it is plain that it must either be stamped out by the active coöperation of all law-abiding citizens, or it will overwhelm and destroy our very form of government. The dividing line between the permissible and objectionable, between right and wrong, should be clearly and unmistakably drawn, and the voice of the community should be heard with proper earnestness and determination, saying to the ignorant as well as the vicious, 'thus far shall you go, but no farther.' We believe that the large majority sin from ignorance. Others have seen the wrong exist and tolerated, and wrongdoers prosper, until their moral perceptions are dulled and blunted. Those who know better, whose opportunity and education is superior, have neglected their duty to their misled fellow-citizens fully long enough. A crusade must be inaugurated, and should be participated in by each and all who love and desire the perpetuation of this government, founded, in the words of the immortal Lincoln, 'of the people, for the people, by the people.' Let all unite and stand shoulder to shoulder in solid phalax for the right, and frown down the

spirit of anarchy now rampant, and ere long the rights of the individual shall again be respected, and this country shall again and in fact become the 'home of the free.'"

Whereas, We recognize that the Master Masons & Builders' association has taken a proper stand in its opposition to the arbitrary dictates of organized labor, and that its hattle is our hattle, and in the belief that the more complete the cessation of all building work during the present strike the shorter will be the interference with business; now, therefore, be it

Resolved, That we indorse the action of said Master Masons' association, and make its position our own, and will actively aid and assist it in and during this strike.

Resolved, That while we condemn and oppose improper actions by trades unions, we still recognize that there are many opportunities for good in associations of workmen, and shall aid and assist them in all just and honorable purposes; that while upon fundamental principles it would be useless to confer or arbitrate, there are still many points upon which conference and arbitration are perfectly right and proper, and that upon such points it is a manifest duty to take advantage of the opportunities afforded by associations to confer together to the end that strikes, lockouts, and other disturbances may be prevented.

Resolved, That this exchange do, and it does hereby, call upon all contractors and builders, be they members of this exchange or not, for co-operation and active assistance; it calls upon all architects; upon the owners of buildings in course of construction or about to be started; upon the press and pulpit; upon each and every citizen, and particularly upon all mechanics and laborers who believe that absolute personal independence of the individual to work or not to work, to employ or not to employ, is a fundamental principle which should never be questioned or assailed; that upon it depends the security of our whole social fabric and business prosperity, and that employer and workman should be equally interested in its defense and preservation.

Each association in the building trades, and the Illinois State Association of Architects, and the Chicago Real Estate board were requested to appoint three delegates to be present at a conference of building trades on Monday, May 19. Two days later over eleven hundred laborers were sustained by the Hodcarriers' union, and eighteen thousand mechanics were eating idle bread while work in a thousand industries and buildings was "closed down." The various divisions of the building trades held a conference on May 19, 1887, to consider the situation and adopt a platform. A committee reported a code of principles, each article of which was discussed and adopted. It reads as follows:

"That from this time forth the signature to the following code of principles by the employe be made a universal condition of employment by all building interests of Chicago, viz.: I recognize the right of every man to decide for himself, without dictation or interference, when he shall work or cease to work, where he shall work, for whom he shall work, how many hours he shall work, and for what wages he shall work. I recognize the absolute right of the employer to decide for himself, without interference from any source, whom he shall employ or cease to employ; to regulate and manage his business with perfect independence and freedom, provided, only, that he deal lawfully, justly and honorably with all men. I recognize the right of every father to have his son taught, and of every son to learn, any lawful trade as on a plane with his right to a knowledge of reading, writing, or any other branch of learning, and should be subject to regulation only by the laws of the land. I hereby pledge myself, in all my relations and intercourse with my employers and fellow-workmen, to maintain and live up to these principles.

"Your committee recommend, second, that the same code of principles be presented for signature to every employer with the pledge therein changed as follows: I hereby pledge

myself to maintain and live up to these principles in the prosecution of my business, and to lend my aid to the full extent of my influence and power for their maintenance and protection among my fellow-employers. I further pledge myself not to employ any workman except upon his signature of this code of principles. Your committee recommend, third, that this conference recommend to our respective organizations to request of each of its members to employ such workmen only who recognize the inalienable rights as above set forth, and evidence their position by subscribing their names thereto. Your committee recommend, fourth, that public announcement be made at once that business will be resumed on or before June 1, with this code of principles as a basis. Your committee recommend, fifth, that a standing committee of one member from each of the building trades, Real Estate Board, and the Illinois State Association of Architects, to be known as the central council of the building interests of Chicago be appointed, whose duty it shall be to see to the carrying out of these principles; that it shall have a sub-committee of safety, whose province it shall be to see that ample protection to all is afforded; with sub-committees on grievances, strikes, arbitrations, and such as may be found necessary, but that it work always and solely for the maintenance and protection of the principles herein laid down. Your committee recommend, sixth, that an address to the workmen of the building trades and to the general public be prepared, setting forth your action and your reasons therefor; that fifty thousand copies be printed and immediately distributed. Your committee recommend, seventh, that the declaration of principles be printed at once and circulated for signatures. Your committee recommend, eighth, that a fund be created to defray the expenses of this central council, and that we request each association here represented to transmit to the order of George Tapper, chairman, the sum of twenty-five cents for each of their members, and that individual contributions of people interested in this work be accepted."

This declaration of principles was ordered to be printed in six languages and given a general distribution, so that the foreign workmen could understand more clearly that a definite line between employer and employe was drawn, beyond which neither could go without revolution. Objections to some of the articles were sustained, and on May 23 changes were made requiring employes to assent rather than to sign. A day later the executive committee of the National Association of Builders issued the following report:

"In view of the serious disturbance to building interests in the City of Chicago, and the widespread influence likely to flow from it to other localities, affecting not only the building trades, but all branches of industry in the United States, it has been thought wise to call the executive board of the National Association of Builders to this city, to carefully examine the situation, investigate the causes which have produced the existing conditions, and report thereon to all filial bodies for their information, together with such suggestions for their future action as may seem wise and best. All interested parties (and every business has interests more or less directly involved in this question) should thoroughly understand that the National Association of Builders assumes no powers of a dictatorial character; it simply acts as an advisory body, and communicates its conclusions only in the form of recommenda-

tions, which its affiliated associations may or may not adopt or follow, as the circumstances by which they are surrounded demand. But it should also be borne in mind that the National association endeavors to confine its expressions of advice and recommendation to the general principles that underlie and affect conditions in all localities, and in this especial issue and crisis which has arrived in one of the most important business centers in this country, the executive board intends to be particularly careful, while considering the facts that exist in this city, to avoid as much as possible, in its advice or recommendations, all local or superficial issues, and deal largely with the problem that is rapidly demanding solution in every city and town in the land.

“It is one of the purposes of the National association to keep watchful guard over the interests of builders everywhere throughout the country, giving its advice and assistance to all its members when difficulties arise, using its influence with them to secure and maintain just relations, either in their contact with each other or in their relations to owners, architects or workmen, and prevent the encroachment of other interests upon ground that belongs to them. The exact circumstances that have brought about the present blockade of business in Chicago may not be absolutely identical with the issues that have caused similar disturbances in other cities, and they may not be exactly reproduced in the future in any other locality; but the root from which they spring has been planted everywhere, and while the plant may be good and worthy, it is a matter of the greatest concern to all that the growth from it be carefully watched and held in check, lest it assume such rank and oppressive proportions that other interests, equally valuable and necessary, be overgrown and choked. It is sometimes necessary to prune a vine of rank and unhealthy growth, in order that it may bear good fruit. We apprehend that the experience of the builders of Chicago in this crisis will be of great importance to builders in other cities, and we hope to utilize their experience in such a way that general business interests will be better protected and preserved in future, the proper purposes, opportunities and interests of organizations of workmen maintained and encouraged, and that the individual workman himself, whether he be connected with organizations or independent of them, may be placed in a position where he may exercise, unquestioned, his rights as an American citizen. In this endeavor we ask the coöperation of all business men, particularly those whose affairs bring them into direct contact with the difficult and perplexing questions incident to the employment of labor, and the community generally, for the public as a whole has an immense stake in this question of individual liberty. We have endeavored to make our inquiries in a disinterested spirit, and, in pursuance of this purpose, have given hearings to the employing builders, the Bricklayers' union, non-union workmen, manufacturers, merchants, bankers, architects and business men generally, believing that we could only consider the question fairly by listening to all sides and opinions.

“The result of our investigation leads us to report as follows: The demand for payday on Saturday by the Bricklayers' union, which precipitated the present blockade of business in the building trades in Chicago, was in itself inconsequent and trivial, and a concession or denial of it, on its merits, would have been immaterial; but it was presented in such a man-

ner, at a time when the hodcarriers' strike, in progress, had been supported by the amalgamated building trades, and had been preceded by such concessions on the part of the employers, that they felt this to be the 'last straw,' and that their duty to themselves and others compelled them to make a stand and demand a surrender of the rights which had been previously abrogated. In this course, and in the manner in which the builders have presented their convictions and method of future action, we believe that nothing has been done beyond what the situation imperatively demanded, and the safe and proper conduct of business required; we are only astonished that the crisis has not been sooner reached. It seems to us that this strike or lockout was not caused by a demand that it was impossible to grant, but was the direct result of the assumption by organizations of workmen, for a number of years, of rights not properly within their jurisdiction, and the demand coming, as it did, under such aggravating circumstances, occasion was properly taken, in our opinion, for a complete cessation of business, in order that it might finally be decided and settled whether the employer should for the future be free from further encroachments, and that he might recover those rights and prerogatives which properly belong to him. It is worthy of note that this issue or demand was not made in the dull season, when it might have been more easily arranged, or at least considered, but after the busy season was reached, and in addition to and in support of existing strikes. The union making it did not seek to consult the employers in regard to its feasibility, although after it was promulgated (the employers requesting a reconsideration) a slight alteration was made in one of the details. It appears, according to the testimony of the Bricklayers' union, that there has been no general strike in their trade for the last four years, but they admit that during that period they have been successful in enforcing certain rules and regulations in regard to control of journeymen and apprentices (which are set forth in their printed constitution and by-laws), and that the enforcement of these rules has caused strikes or stoppages of work in many cases upon certain jobs. It is in the rules or regulations referred to that conditions are imposed which the builders claim are an encroachment on their peculiar rights as well as the rights of independent workmen, and that in submitting to them they have made concessions which they can no longer endure. In this opinion we entirely and heartily concur.

"We will cite a few of these rules, calling attention to the fact that although the employers have at least an equal interest in the matters treated, they have never been even consulted in their formulation, but have been expected to comply with them as presented, and have so complied, for the reason, as they claim, that they could not help themselves. The first rule, or regulation, or custom, which demands notice is that which prevents workmen, not members of the union, from obtaining work. This is excused by the declaration of the union that they do not claim that the non-union man shall not work—they simply will not work with him; but this explanation is purely a clever evasion of the point at issue, for the workman is by force of circumstances deprived of opportunity to labor, and the position taken by the union is manifestly a conspiracy against the rights of the individual. It may truly be considered the first step toward setting up an oligarchy in the midst of a free people. This

assumed right is most tenaciously held, and is one of the most dangerous expedients ever adopted by a voluntary association. We believe it to be a direct attack upon individual liberty, and an evil that will react upon those who attempt to establish it. We also believe it to be entirely unnecessary for the welfare of unions—that all the ends they wish to gain can be secured by legitimate measures, and that not until they cut out this cancer will harmony be restored and reforms established. This custom should be constantly and absolutely denied.

“The next rule which we wish to consider is that establishing a walking delegate. Some of the functions of this officer (if he may be so designated), as explained by members of the union, are perfectly harmless, and possibly quite a convenience; but if proper relations were permitted to exist between employer and workman these functions could be equally well sustained by the foreman on the job. There are other powers, however, with which he is invested, which are so arbitrary in their character, which deprive the employer so completely of that control of workmen necessary to the prosecution of his work, that it is simply ridiculous to submit to it. For instance, ‘he shall be empowered to use his personal judgment on all points of disagreement between employer and employe, between regular meetings.’

“The simplest mind can readily see how little control the employer has left him, when a man not in his employ is permitted to come upon his work and ‘use his personal judgment’ in questions of disagreement, the workman being obliged to then obey his orders. The employer seems to be a mere cipher under this arrangement, and can only fold his hands and wait till the ‘regular meeting’ (at which he has no opportunity to be heard) settles whether the ‘personal judgment’ exercised be just and fair. The result can be imagined. In the hands of an exceptionally honest and discreet person such a power would be dangerous enough, but in the control of a man who may not possess these qualities, or possess one of them without the other, the chances of stoppage of work under his orders, the constant annoyances to which employers, architects and owners may be subjected, makes this infliction too grievous to be borne. The thousands of unnecessary strikes, stoppages and obstructions to work for every conceivable cause, or no cause, which have occurred in all parts of the country in the name of justice and the walking delegate are evidence enough that to owner, architect, employer and workman, he is an abomination not to be tolerated. As an adjunct to the walking delegate comes the ‘steward,’ who, like him, has some functions perfectly unobjectionable, but who in other ways is empowered to assume certain direction and control which surely is not consistent with the duties of a workman, that is, if the workman is considered to have any duty to his employer. It is noticeable that in the description of the duties of these two gentlemen, it is the ‘interests of the union’ only that they are directed to observe; it is true that the walking delegate is not an employe, but he is to have free access to the work, can interfere and obstruct as he pleases, but the interest of the employer seems to have been omitted in the recital of his duties. When it is considered how much is taken off the hands of the employer by these two persons, it is somewhat a matter of surprise that owner and architect burden themselves with the useless middleman, the nominal employer, when they can have the whole matter handled by the

union and its agents. The rules in relation to apprentices are peculiarly restrictive, and leave nothing whatever that is worth possessing in the hands of the employer. We can not imagine why any contractor would care to have apprentices at all, if their direction and control is to be so completely out of his hands. These rules declare that 'no contractor shall be allowed to have more than two apprentices at a time'; 'he will not be allowed to have any more until their time is completed'; 'he may then replace them.'

"The contractor must sign such indentures as are prepared by the union without consultation with him. 'No contractor will be allowed to have an apprentice over eighteen years of age unless he be the son of a journeyman who is a member of the union.' Apprentices must also be members. The contractor is thus debarred from putting his own son at apprenticeship if he happens to be eighteen years of age. This appears to be most emphatic special legislation. In fact the whole management and control of apprentices is virtually in the hands of the union, and we submit again that such action as this is most indefensive and pernicious. It has already caused a tremendous reduction in the number of young men learning the trade, and, if practiced in other branches of business, would create a state of revolt among the people, and would be denounced throughout the length and breadth of the land as a violation of rights heretofore supposed to be secured when this country became a republic. Foremen upon the work must be members of the union. Inspectors upon public buildings must be practical bricklayers in the opinion of the union, and members of it; in fact there are so many points that demonstrate the development of this one-sided power of the union, and showing abuse of their place and mission that we can not take time or space to enlarge upon them. To our mind the constitution of this union, and many others, is framed upon the assumption that all employers are dishonest and bad men, so all are to suffer alike. The union seem to have come to the conclusion that the laws of the land are not sufficient, and they propose to be not only a law unto themselves but a law unto all others who come in contact with them. This assumption, if permitted to stand and grow, will tend to disintegrate the whole social and political fabric upon which citizens of this country depend for protection; and we believe it to be our duty to call upon all good citizens to deny it in unequivocal terms.

"We submit that these rules which we have quoted, and other customs which have naturally grown from such development of power (which are neither written nor admitted by the union, but which, nevertheless, exist), are distinctly an encroachment upon the province of the employer; that under them he is robbed of that control and authority absolutely essential to the proper conduct of his business. Submission to such dictation as this simply opens the door wider for interference, and the employer is not secure from day to day from new and harassing demands, so that eventually he will have practically nothing left to him but the privilege of paying the bills.

"The crisis here, in Chicago, is of a tremendous importance and significance to every builder and every business man, not alone in this great and rapidly growing city, but in every city of the country, for here is seen a demonstration of the tyranny which becomes

possible when improper methods are submitted to; a tyranny which holds the workman in its grasp quite as surely as the employer, and this experience and demonstration should be a timely warning to all. Labor unions have gone too far. They have mistaken their functions and overstepped their boundaries. The time has come to 'call a halt,' and to demand a surrender of that which has been improperly obtained. To do this will require some patience and some sacrifice, but the end to be gained is but justice and right, and worth all that it may cost. Better that not another brick be laid or another nail be driven in Chicago for a year than this opportunity be lost to regain the rights and prerogatives which make it possible for employer and workman to be independent and successful.

"Let nothing be done to injure the union in the prosecution of their rightful purposes; they have a most important mission and a great field for usefulness. Aid and assist them in these things by every means in your power, but for their own good, as well as your own safety, stand constantly and steadfastly opposed to any and every attempt to take away that which makes you an employer, or from the workman himself the right to work. Trade unionism in theory and as it may be consistently and intelligently carried out, can be a most useful aid to all concerned; but, as at present managed, clinging fast as it does to the cardinal principle of the right to prevent any and every man from working who does not happen to belong to the order, it is a bane to society and a curse to its members. We approve of the position taken by the builders of Chicago in this emergency, and we congratulate them that other branches of business, whose interests are so closely interwoven with theirs, have had the courage and willingness to make common cause with them, recognizing, as they evidently do, that if this sort of dictation is permitted to grow, that their own position will become undermined and security vanish. We congratulate them also that general business interests have given them such hearty coöperation and support, and we feel assured that will continue until the victory is won.

"We recommend all filial associations of this body to assume the same attitude in the event of an issue being forced upon them by further encroachments, and we suggest to them, as well as to the Builders & Traders' exchange of Chicago, that in order to encourage all workmen who wish to have an opportunity to freely work, untrammled by the improper requirements and rules of voluntary associations (membership in which, as far as most workmen are concerned, have become involuntary), and be protected in their work, it will be wise to create and establish at once a bureau of record in connection with their associations, where any and all workmen may put themselves on record as assenting to the principles of individual liberty, announced here in Chicago, and by and through which the workmen so assenting will be kept at work, and protected in it, in preference to those who deny these principles. Let steps be taken, after a certain time given to develop the honest purpose, good character, skill and ability of the workmen, to make them members of your own associations, and so institute, for the first time, a union wherein employer and employe shall be joined, and their interests considered in common, as they properly should be. We believe this would be a step in the right direction, and the dawn of the day when the two branches of workmen—the directing workman and the manual

workman—will not be arrayed against each other, but will consider and act in concert for their mutual benefit.

“Closing now our report to filial associations, we wish to address a few words to the public at large, whose servants we are. We believe that the builders of this country stand to-day in a position which commands the attention of all kinds and classes of business men everywhere. We wish to do only that which is right and in accordance with the principles upon which this republic was founded. Individual liberty is the dearest possession of the American people; we intend to stand by it and protect it in every emergency, and, to our mind, there has never been before presented an occasion more significant and decisive than the present, and in doing all we can to sustain it we feel that we are fighting not for our selfish ends alone, but for the welfare and protection of every individual in the land. Individual liberty is not incompatible with associations, and associations are not incompatible with individual liberty, on the contrary they should go hand in hand. We call upon all to sustain us in maintaining all that is good and in defeating all that is bad in this difficult problem of labor. Liberty is our watchword, and this struggle is but a continuation of that endeavor which began a hundred years ago, when a little band of patriots, at Concord bridge, ‘fired that shot heard round the world,’ which was the first blow in establishing American independence.”

This document was signed by J. M. Blair, John S. Stevens, Edward E. Scribner, William H. Sayward, John J. Tucker, members of the executive board of the National Association of Builders. As an immediate result of this report, several contractors notified Joseph Downey, then president of the master masons, that they were ready to resume building operations, and permits were issued to them for the purchase of material.

But the trouble was far from being ended. The unions did everything possible to embarrass the contractors, and by reports and through walking delegates kept the seeds of discord alive, although the leaders saw thousands leaving Chicago to work for half pay in other fields. The brick manufacturers and cut-stone contractors issued manifestoes on May 31 and June 1, and the Central Council of Builders was in possession of the mastery, through the wisdom of Joseph Downey and the following named representatives of the trades: Robert Vierling, metalworkers; H. G. Savage, steamfitters; T. C. Diener, cut-stone contractors; John Sutton, master plasterers; M. W. Powell, gravelroofers; George Tapper, master masons; J. B. Sullivan, master painters; Edward Kirk, Jr., galvanized-iron cornice; William Hearson, carpenters and builders; A. J. Weckler, North Side brick manufacturers; P. B. Wight, fireproofers; C. B. Kimbell, non-union stonecutters; F. C. Schoenthaler, Builders & Traders' exchange, and Henry L. Turner, Real Estate board.

The Carpenters & Builders' association offered a nine-hour day and payment by the hour, on June 2, and in other circles a disposition was shown to end the lockout. The continued aggression of the tradesmen militated against carrying this disposition into effect, and on June 3 the Central Council of the Building Interests of Chicago adopted working plans to further counteract the aims of the strikers. Those plans provided that the object

should be the promotion of the building interests of Chicago, the harmonizing of the different branches and an adoption of such measures as from time to time may be found beneficial, carrying out the following platform of principles, which has been adopted by the various associations represented:

"We affirm that absolute personal independence of the individual to work or not to work, to employ or not to employ, is a fundamental principle which should never be questioned or assailed; that upon it depends the security of our whole social fabric and business prosperity, and that employers and workmen should be equally interested in its defense and preservation.

"We recognize that there are many opportunities for good in associations of workmen, and, while condemning and opposing improper action on their part, we will aid and assist them in all just and honorable purposes; that while upon fundamental principles it would be useless to confer or arbitrate, there are still many points upon which conferences and arbitrations are perfectly right and proper, and that upon such points it is a manifest duty to take advantage of the opportunities afforded by associations to confer together, to the end that strikes, lockouts and other disturbances may be prevented. All associations of building trade employers, the Real Estate board, the Illinois Association of Architects, and the Builders & Traders' exchange shall be entitled to one representative each. The officers shall be elected at the annual meeting, and shall consist of a president, vice president and financial secretary, to hold office for one year, or until their successors are duly qualified. Regular meetings shall be held the first Friday of each month at 2 o'clock P. M. The first regular meeting in June shall be the annual meeting. Special meetings may be called by the president or any three members of the council. The following standing committees, consisting of three members each, shall be appointed by the president at the annual meeting, to hold office for one year, or until their successors are appointed: Credentials—to whom shall be referred all applications for membership. Safety—whose duty it shall be to see that ample protection to all is afforded against unlawful interference. Strikes and grievances—whose duty it shall be to investigate all strikes and grievances, and to report to the council fully in regard to the same, with such recommendations as they may deem necessary. Arbitration—to whom shall be referred all questions of differences between employers and employes. Annual dues shall be twenty-five cents for each member of the various associations belonging to the council, and assessments may be made upon the same basis of representation."

The officers elected are named as follows: George Tapper, president; H. G. Savage, vice president; F. C. Schoenthaler, financial secretary; J. B. Sullivan, T. C. Diener, A. J. Weckler, a committee on credentials; H. L. Turner, C. B. Kimbell, and Robert Vierling, one on safety; P. B. Wight, H. G. Savage and M. W. Powell, one on strikes and grievances; Edward Kirk, Jr., William Hearson and John Sutton, one on arbitration.

On June 4 the committee of safety gave notice that the Central Council would "follow up and prosecute persons found intimidating workmen," and the other committees took decisive action toward the complete resumption of building operations. The committee on strikes and grievances led the way in the matter by pointing out the errors of the strikers thus:

“We believe that the Master Masons’ association has acted with the purest motives toward their employes, and in the spirit of self-sacrifice with regard to their own interest. They have gone so far as to encourage their men to form a union devoted to higher principles than the rule or ruin policy which actuates the present organization. This may all be well in the future, but it does not help to do away with the objection of the men to taking up their tools. A contract for labor differs from a contract for anything else, only in that the confidence of him who disposes of his labor must be unqualified to the last degree. If the employer appeals to the man as an individual, he must inspire him with confidence in his representations. If the Master Masons’ association intends never again to recognize the union rules, let it say so in terms so unqualified that no one can misunderstand it. If the individual workman fully believes it, he will be only too glad to come out like a man, and there will be a scramble to see who gets there first. If the master mason intends to live up to his profession, let him guarantee his employe work for a stated time—long enough to convince him that it is more to his interest to go to work than to cling to his union and stand still. If no one mason feels confident that he can guarantee steady work, say, for six months, let the master masons agree among themselves to provide work, so that if a man is laid off on one job he can be sure of work on another, where he will not meet with any interference. If the employer expects his men to work, he must guarantee them full protection in case of interference. But more than all things he must guarantee his employe that he will never be displaced in consequence of any future compromise with any labor organization. If the master masons have faith in the stand they have taken, and mean to maintain it at all hazards, they will get all the help they want. If they have any idea that a strike is on their hands to be settled by compromise with any body of men, they may as well surrender to the union at once. We do not believe that this weakness exists among them, but the public and their unemployed mechanics must be convinced by their acts that they are thoroughly in earnest, as we believe they are, and that guarantees, such as have been suggested, will be carried out in good faith to the very letter, and at all hazards. The public, which must sustain us or we fall, will then be convinced that there is no strike, except a strike for right and justice. And if needs be that the employers must be responsible for it, let them glory in it as our forefathers did. There was a strike, as we admit. A strike, did we say, for a Saturday payday? It was so called. It was resisted, and the men who were expected to pay on Saturday have not done so. It was a strike aimed at the Master Masons’ association. It was not for any great benefit that Saturday payday should confer. It was a strike to show the power of the striker. It was an exhibition of strength from those whose strength has not been resisted or questioned for four years; a power which knew no resistance, but which must be periodically exhibited to make its presence felt. It is that same power which is still so strong that it makes your mechanics blind to all your heaven-born principles and deaf to all your promises. You, gentlemen of the Master Masons’ association, and all you who have nailed our banner of liberty upon your walls, have strength also. In a battle of endurance you can win, but if you do win by extermination, then your sin will be greater than the fruit of your victory. But remember

that those who live by the sword, if they die so living, shall also die by the sword. Your weapon is the olive branch. Your principles are just. Let your faith be strong, and in the end you will find your best friends in the camp of your enemy."

This document was approved June 7. Instead of being studied by the tradesmen, a convention, to form a national labor association, was called for June 28, but wiser heads were at work, and on June 10, a communication from the bricklayers to Joseph Downey asked for arbitration as a means of settlement. The letter was discussed by the Master Masons' association, and found unsatisfactory. A resolution offered by G. C. Prussing and adopted defines the attitude of the employers:

"The position of this association can hardly be misunderstood at this late day. It has been laid down in our platform in unmistakable language, and is further contained in an address to the bricklayers and stonemasons of Chicago and published by the public press. We have addressed them as individuals, and shall continue to treat them as individuals, not an organization. Principles can never be subject to arbitration. And such matters as can properly be arbitrated—such as hours of work, wages, or other working rules—can not be discussed with any committee until an organization is in existence which has adopted the principle of individual liberty freely and fully, and is governed by constitution and by-laws based thereon. This community has suffered too often and too long, and the sacrifices brought have been too great to listen to any hint of a possible arbitration or compromise. We owe it to ourselves; to the other building trades who have taken the position held by us, we owe it to the entire community to settle the present troubles right. That is, on a basis that promises security against future arbitrary interruptions of business. To individuals we are ready to give work; we guarantee them steady employment as far as in our power, and will protect them in every way, and if the men who now take up their tools should choose to form an organization for mutual protection and any other honorable and lawful purposes, based on the principles we acknowledge, we will aid and assist them in perfecting such organization, and will treat with them, and arbitrate any and all questions properly subject to arbitration."

A meeting of the Union League club, held June 13, indorsed the action of the employers and declared the principle for which thirty thousand men were locked out just and equitable. On the 16th of that month the members of the bricklayers' union and its friends assembled at Battery D to oppose the growing idea that they were the guilty parties in originating the troubles. Toward this end the following preamble and resolution was adopted:

Whereas, Certain questions and matters of difference have arisen between us and the Master Masons & Builders' association of Chicago, and the controversy over the same has resulted in a widespread suspension of building operations in this city, to the immense injury of both the employers and the employed, and to the great damage of the community at large; and there is no adequate remedy for any such case under any existing law; and the working people have often been admonished through the public press and otherwise that they should not resort to a strike or boycott to obtain their rights, but should appeal to the law for protection and relief, and in case the existing laws are insufficient to the lawmaking power for new and better enactments; and in pursuance of such admonitions they earnestly

appealed to the legislature at the last session to provide an adequate remedy for conflicts of employers and the employed; and the legislature nevertheless wholly neglected and refused to provide any such remedy, or even to consider and discuss the subject in any open and public manner; and there is now no other mode in which relief can be sought than retaliation by strike or boycott on the one hand, or by voluntary arbitration on the other; and the same legislature that refused to provide any remedy for such cases, has sought to make every participant in any strike or boycott punishable as a criminal, without extending the same penalties to the corresponding offense of a lockout, so far as we are yet informed; and we have heretofore offered and proposed, and do now again and openly and publicly offer and propose, to submit to the full and final decision of arbitrators, to be chosen in the usual manner, every question and matter of difference or controversy pending between us and said Master Masons & Builders' association, and to abide by and perform such decision, and would be willing to have one of the judges of Cook county chosen to act as umpire in case of disagreement of the arbitrators; and the power of public opinion is the only force by which we can compel such submission to arbitration; and the public at large are deeply interested in the matter, and would be greatly benefited by an early resumption of the suspended building operations; and we are willing and desire that a decision by arbitration should extend over and include the entire residue of the building season of the present year, that any future difficulty may be avoided; now, therefore, be it

Resolved, That we condemn in strong terms the neglect of the legislature to provide any adequate legal remedy by a state board of labor and capital, or otherwise, for conflicts between employers and the employed, and that we will continue the agitation of this subject till proper laws have been enacted providing such a remedy; that we condemn in equally strong terms the refusal of said Master Masons & Builders' association to submit to arbitration whatever claims, charges, questions, controversies, or differences they may have with or against us; and we appeal to the mighty power of public opinion to uphold our cause, and to compel the submission to the arbitration we desire; that we purposely abstain from attempting to argue in the present preamble and resolutions the justice of the points for which we contend with the Master Masons & Builders' association, because that is the matter which should be discussed before and determined by the arbitrators whose appointment we desire: that we appeal to the two great organs of public opinion, the pulpit and the public press, to advocate the righteousness of our demands, or to point out to us if they can wherein the same are contrary to justice or offensive to law and order; and in that case to show us some other lawful way, if any exists, by which justice may be secured.

Five days after, the Central Council of the Building Interests of Chicago issued an address to the citizens, giving the history of the organization since June 1, 1887, and explaining its dealings with the unions of workingmen. This address reads substantially as follows: "When, on the 29th of April last, the United Order of Bricklayers & Stonemasons of Chicago decided, without consultation with their employers, that they would only receive their pay every two weeks on Saturdays, the Master Masons' association refused to comply with the demand, and the union men struck on their work wherever it was refused. The Master Masons' association then resolved to suspend all work on and after the 13th of May, and did so unanimously. The fireproofing companies which employed men of the same union took the same action. The strike was made inoperative for the time being by the lockout of the employers. The Builders & Traders' exchange met on the following day, resolved to sustain the master masons, and called upon each trade represented to send three representatives to a general conference to consider the situation. The conference was organized with a full representation, and on the 25th of May adopted the following platform and code of principles to be submitted and ratified by all the building organizations: We affirm that absolute personal independence of the individual to work or not to work, to employ or not to employ, is a fundamental principle which should never be questioned or assailed; that upon it depends the security of our whole social fabric and business prosperity, and that employers and work-

men should be equally interested in its defense and preservation. We recognize that there are many opportunities for good in associations of workmen, and while condemning and opposing improper action upon their part, we will aid and assist them in all just and honorable purposes; that while upon fundamental principles it would be useless to confer or arbitrate, there are still many points upon which conference and arbitration are perfectly right and proper, and that upon such points it is a manifest duty to take advantage of the opportunities afforded by associations to confer together to the end that strikes, lockouts, and other disturbances may be prevented. Code of principles by the employe to be made a universal condition of employment by all building interests of Chicago, viz.: I recognize the right of every man to decide for himself, without dictation or interference, when he shall work or cease to work, where he shall work, how many hours he shall work, and for what wages he shall work. I recognize the right of the employer to decide for himself whom he shall employ or cease to employ, and to regulate and manage his business with perfect independence, provided, only, that he deal lawfully, justly and honorably with all men. I recognize the right of every father to have his son taught, and of every son to learn any lawful trade, to be the same as his right to a knowledge of reading and writing, or any other branch of learning, which should be subject to regulation only by the laws of the land. By accepting employment I agree in all my relations and intercourse with my employers and fellow-workmen to maintain and live up to these principles. The conference also asked each organization to nominate one member to a central council of the building interests. The platform was adopted by the several organizations, and representatives were appointed to this body, which is now recognized by the trades as the representative of all the building interests collectively, and is permanently organized.

“At the same time the Master Masons’ association resolved to resume business on or before June 1, and adopted a uniform set of working rules, defining the hours of labor and other conditions necessary to the prosecution of their business, etc., in accordance with the platform that had been adopted. The fireproofing companies did the same thing. The action of these bodies broke the lockout, which was of but brief existence.

“It is naturally asked, therefore: Why this continued stoppage and stagnation in the building business? It may be briefly said, in reply, that the men have in large numbers refused the work offered to them in accordance with the dictates of the United Order of Bricklayers & Stonemasons, and upon that body rests the responsibility entirely. Whatever dispute the master masons have had with their employes’ union, has been taken up by the whole body of trades here represented, while the employers of the associations of master masons, fireproofers, and carpenters have officially decided to treat no more with unions as unions, but with men as reasoning beings. With these facts before us it behooves us to look the question squarely in the face and see how we stand to-day. Some of the masons have small forces of bricklayers and stonemasons at work and all the laborers they want, for there is practically no strike among the laborers. The fireproofers are well supplied and have practically resumed business. There are a few buildings in progress, on which we are informed that the

owners have employed foremen and journeymen appointed by the union. There are others again, the contractors for which are 'union bosses,' or members of the union, who have become employers without severing their membership, and hence are strictly bound to all union rules.

"But we still see many deserted buildings where the sound of the trowel is not heard. Thousands of well-trained and, to their credit, be it said, well-behaved artisans may be seen in the streets and about their homes. Many are bricklayers, obeying the dictates of the handful of officials and committeemen and small army of walking delegates who may be seen daily at the union headquarters, placed there by their votes, or, at least, allowed to be there by their indifference, and certainly well paid by their contributions. The time of these officials is partly devoted to receiving contributions from men whose dues are now really filched from their wives and children, partly to having their vanity flattered by the obsequious prayers of so-called capitalists for help to satisfy their greed and avarice in getting their own buildings finished before their neighbors, and partly to giving out fulsome accounts of their victories over the bosses, in a supposed contest that really does not exist. In consequence of this we see the public misled by the daily press into a belief that nothing is going on but a strike between the boss masons and the Bricklayers' union on the senseless question of a Saturday payday, characterized by nothing but the obstinacy on both sides, while in reality the united employers in all the building trades are contending simply for the natural rights of a man, whether he be employer or employe, against a score of professional agitators who temporarily control the skilled mechanics of this country.

"Now, last of all, what do we see at the master masons' headquarters? A united body of men with large interests at stake, and great responsibilities, who have not attempted to enforce a long and exhausting lockout for bringing their misguided employes to terms through poverty and distress, but calmly and deliberately leaving to us, the representatives of the sister building trades, the arbitrament of their own interests. The principles that they have adopted are those which we formulated, and they have agreed to the broad doctrine of freedom and justice. They did not seek to prolong the contest with their employes which had arisen from such a slight pretext. But as soon as the conference advised they acted (and so have the carpenters). They have offered immediate employment on a fair basis. Is it their fault that their employes do not all come back to them? They have used every means that they can with due regards to their own dignity and self-respect to bring their men back. If they do not come it is simply because of the authority which the union holds over its members. They are more devoted to their union, which says 'no,' restraining their individual acts, than to their employers, who say 'come,' more, even, than to their wives and families. In other words, while individually they believe in the principles which we have enunciated, they hope for a reconciliation between the union and the bosses. From all past experience many of them believe that there will be a reconciliation or compromise, and they think their own safety is in waiting. We should remember that these men stand in a dilemma. Each one of them is in a state of mental perplexity trying to decide in his own mind which course to take

for his own interest. Heretofore he has not exercised his own mind on these subjects. He has left all the details of the contract for his labor to the officials of his union. It has become a second nature to him to look to his union for protection in all things. He has voluntarily ceased to be a free agent.

“There has been much talk of late on the subject of arbitration. A proper understanding of the situation will show how impossible such a course is at present. The responsibility for the prevention of the men from working has been fixed where it belongs. It is useless to talk now of a settlement. There will be no solution until the idle men take up their tools and renounce their allegiance to the present union. There will be no yielding until that is the case. The sister trades have and will continue to sustain the masons and other trades affected by the encroachments of labor organizations until then. In the following resolutions, passed at the regular meeting, held June 10, the central council thus expressed its views upon the importance of uniform working hours:

Whereas, In the opening of this council it is of the greatest interest to all of the trades here represented that the hours of work on buildings in course of erection should be uniform in all the trades,

Resolved, That while we recognize the right of every trade to establish its own working hours, we think those established by a large majority, not only in Chicago, but in other cities, should be considered as a precedent for others to follow.

Resolved, That the Association of Master Masons & Builders has the heartiest support of the building trades here represented in its battle against exactions of an unscrupulous and tyrannical trade union, which is the enemy alike to the building trades, and the interests of its own members.

“The position they have taken under the principles adopted by the conference is a just one, they have held out the olive branch to their former employes, and it only remains to inspire them with confidence in its representations to the end that work may speedily be resumed.”

The tide of popular sentiment was with the employers this time, and the bricklayers had to withdraw their demand for a Saturday payday. On June 24 the executive committee of the master masons offered to submit their platform and code of principles to any judge of the United States court and four business men, to be selected by him, provided the bricklayers' and stonemasons' unions would submit their constitutions and by-laws to the same court of arbitration. The workingmen objected to the presence of a judge of the United States court, as well as to men selected by him, and this objection was sustained, so that five employers and five employes, with Judge Tuley as umpire, were chosen arbitrators, and on July 8 rendered the following award:

“That, recognizing the fact that organizations of employes and employers, like these from which this committee originated, do exist and have become important factors in our industrial society, and that they will, in all probability, continue to exist, we do not attempt to determine whether the motive or basis of either organization was right or wrong. They appear to be a necessity arising out of the present conditions of society, and while such combinations keep ‘from violence or show of violence,’ no great danger need be apprehended. Nor did we attempt to determine which organization was to blame for the present paralyzed condition of the building industry of this great city. We recognized the fact that the two

organizations, between which there should be many 'bonds of sympathy and good feeling,' were carrying on a bitter war with each other, by which many thousands of men were deprived of work, much suffering and privation brought upon innocent parties, and immense pecuniary losses daily sustained; and we determined, if possible, to reconcile the differences and place the relations of the two organizations upon a basis by which strikes, lockouts, and other like disturbances might in future be avoided. We discussed the relations of the contractor and the workmen, and found much in which they had a common or joint interest, and were mutually concerned. We endeavored to discuss and settle each trouble and grievance in a conciliatory spirit, not in way of compromise, to give and take, but in a spirit of fair play and upon just and equitable principles. We found that the main cause of trouble was in the separate organizations endeavoring to lay down arbitrary rules for the regulation of matters which were of joint interest and concern, and which should be regulated only by both organizations by some species of joint action. We, therefore, determined upon and submit herewith a project for the institution of a joint standing committee for that purpose. The article herewith submitted, providing for such a joint standing committee, to be elected annually in the month of January, defining its powers and duties, we request shall be incorporated into the constitution of each association.

"This joint committee will be constructed of an arbitration committee of five members from each organization (the president of each being one of the five) and an umpire who is neither a working mechanic nor an employer of mechanics, to be chosen by the two committees. This joint committee is given power to hear and determine all grievances of the members of one organization against members of the other, and of one organization against the other. To determine and fix all working rules governing employer and employes, such as the minimum rate of wages per hour, the number of hours of work per day, uniform payday, the time of starting and quitting work, the rate to be paid for night and Sunday work, and questions of like nature.

"And it is also given power to determine what number of apprentices should be enrolled so as to afford all boys desiring to learn the trade an opportunity to do so without overcrowding, so as not to cause the coming workman to be unskilled in his art or the supply of labor to grossly exceed the demand therefor. It is also given exclusive power to determine all subjects in which both organizations may be interested, and which may be brought before it by the action of either organization or the president thereof. It becomes necessary, in order that all questions and grievances which the committee has settled, and to make the constitution and by-laws of the organizations conform thereto, and to the powers given to future joint arbitration committees, that some changes should be made in such constitution and by-laws. The adoption by the Master Masons & Builders' association of the article for the joint committee, as recommended, together with some slight changes in their constitution will be sufficient. The United Order of American Bricklayers & Stonemasons will be necessitated to make changes in its constitution, and by-laws to make the same consistent with and to conform to the spirit and intent of the powers and duties conferred on the joint com-

mittee; and among other things the officer heretofore known as the walking delegate is to be known hereafter as the collector, and all the objectionable duties and powers of the office have been done away with. The steward will remain guardian of the men's interests and mediator for them; his arbitrary powers are taken away. The interests of the members of the union are protected by the foreman being required to be a member of the union, but he is restored to his position as the employe of the contractor, and, while so employed, is not subject to the rules of the union. The eight-hour day has been conceded to the workmen. It is in accordance with the state and, we believe, in accord with the spirit and progress of the age. The question of payday, whether on Saturday or on Tuesday, was not considered a question of vital importance, but, it being one of the questions left to the umpire, he decided that inasmuch as Tuesday has been the payday with the principal contractors in the trade of this city for more than twenty years last past, and as experience in other trades and occupations has demonstrated that the payday of Monday or Tuesday has worked more beneficially to the workmen and their families than the Saturday payday, and inasmuch as contractors ought not to be required to change the payday in the midst of the working season, having presumably made their pecuniary arrangements to meet the Tuesday payday, he would name Tuesday as the regular payday until the same should, if desired hereafter, be changed by the joint committee on arbitration.

"We have settled the differences between the two organizations. While every inch of the ground has been fought over, yet, having the task assigned us, we in good faith determined to do everything that was fair, just and honorable to accomplish our object. We feel we have succeeded without compromising the honor, the rights, or the dignity of either organization, and hope that we have succeeded in establishing a basis upon which all future troubles may be settled and probably be prevented. We respectfully ask your adoption of this report and the article as to the joint arbitration committee, by immediate action, to the end that work may be commenced on Monday, July 11, it being agreed that neither organization shall be bound by its action if the other should refuse to take similar action."

This award was signed by A. E. Vorkeller, P. J. Minniter, John Pearson, Theodore Rebusch, Charles J. Lindgren, arbitration committee for the United Order of American Bricklayers & Stonemasons' association; George C. Prussing, Joseph Downey, George Tapper, William O'Brien, Charles W. Gindele, arbitration committee for the Master Masons & Builders' association, and Judge M. F. Tuley, umpire.

Following the work of the arbitrators the question of apprentices and rules was discussed by the joint committee and the following rules adopted: "Section 1. The minimum rate of wages shall be forty cents per hour. Sec. 2. Eight hours shall constitute a day's work throughout the year, work to begin at eight A. M. and end at five P. M., but the noon hour may be curtailed by special agreement between the foreman and the majority of the workmen, but not in such a way as to permit more than eight hours' work between the hours named. No member will be allowed to work overtime except in case of actual necessity. For such overtime time and one-half shall be allowed. Sec. 3. Eight hours shall constitute

a night's work. Night work shall not commence until seven p. m., and shall be paid for at time and a half. Sunday work shall be paid for at double time. Sec. 4. Any member of this union working for a mason contractor shall be paid every two weeks on Tuesday before five p. m. All members of the United Order of American Bricklayers & Stonemasons who have, from actual necessity, taken up their work during the present strike, or lockout, and have thereby violated any rule of said organization, shall be reinstated within two weeks of the execution of the award of this arbitration committee, and shall not be fined or suffer any penalty for said violation of rules; and all members of the Chicago Master Masons & Builders' association who have, from actual necessity, started to work with union men, and in opposition to a resolution of such organization, shall not be fined or suffer any penalty for infraction of the rules, and shall be considered in good standing."

The working rules were signed by the joint committee and the umpire. The following amendments to the constitution of the two organizations were adopted, fixing a permanent board of arbitration: "Section 1. This organization shall elect, at its annual meeting in January, a standing committee of arbitration, consisting of five members, to serve one year. The present standing committee shall continue in office until the election of its successor, in January, 1888. Sec. 2. The president shall be, ex officio, one of said five members. He shall be chairman of committee, and in his absence the committee may designate one of its members to act in his place. Sec. 3. Within one week after the election the president of the United Order of American Bricklayers & Stonemasons shall certify to the Chicago Master Masons & Builders' association, and the president of the Chicago Master Masons & Builders' association shall certify to the United Order of American Bricklayers & Stonemasons, the fact that said committee has been regularly elected, and give the names of members thereof. Sec. 4. When notice of the selection of a committee of arbitration by the other association shall be received, or as soon thereafter as practicable, and within the month of January, the two committees shall meet and proceed to organize themselves in a joint committee of arbitration by electing an umpire, who is neither a working mechanic nor an employer of mechanics. The umpire, when present, shall preside at meetings of the joint committee, and have the casting vote on all questions. Sec. 5. Seven members, exclusive of the umpire, shall constitute a quorum of the joint arbitration committee, and in case of the absence of any member, the chairman of his committee shall cast the vote for such absent members. A majority vote shall decide all questions. Sec. 6. The joint committee of arbitration shall have all evidence in complaints and grievances of a member or members of one body against a member or members of the other, or of one organization against the other, referred to it by the president of either association, and shall finally decide all questions submitted, and shall certify by the umpire such decisions to the respective organizations. Work shall go on continuously, and all parties interested shall be governed by award made, or decisions rendered, provided, however, that work may be stopped by the joint order of the presidents of the respective associations until the decision of the joint committee is had. Sec. 7. The joint committee shall have exclusive power to determine and fix definitely from year to year

all working rules. It shall also have all exclusive authority to discuss and determine all other subjects in which both organizations, or members of both organizations, may be jointly interested and concerned, which may be brought before the committee by either organization or the president thereof. Sec. 8. Working rules are rules governing employers and workmen at work, such as the establishment of a minimum rate of wages to be paid practical bricklayers and stonemasons per hour, and of a uniform payday, to determine the number of hours to be worked per day, the time of starting and quitting work, the remuneration to be paid for work done overtime and Sundays, and other questions of like nature. Sec. 9. The subject of apprentices being a matter of joint interest and concern to both the union and the Master Masons & Builders' association, the joint committee shall have power to decide from time to time the number of apprentices which master masons may take in service. Until further action by said committee all master masons shall be allowed a new apprentice each year, and the term of apprenticeship shall be three years, but any minor taken as apprentice shall be under nineteen years of age. All apprentices shall be allowed to join any organization of their craft, but to be subject to the laws of this state and the contract of apprenticeship made in pursuance of such laws. Sec. 10. This article having been agreed upon by the union of the United Order of American Bricklayers & Stonemasons, and the Master Masons & Builders' association shall not be repealed or amended by either organization except upon six months' previous notice given to the other organization, and such notice shall not be given until after all honest efforts to settle the grievance or difficulty shall have been made."

Thus ended the trial of strength between employes in the wrong and employers in the right. The latter won in the contest. Apart from the moral lesson the strike and lockout inculcated, it is a question if their educational influence did not balance the large sums of money lost by both parties; for men engaged in the building trades learned what toleration means and what the management and remuneration of labor demand.

The address of D. V. Purington before the National convention of brickmakers in January, 1891, is a strong addition to the literature of labor troubles. He was sincere and philanthropic, differing widely from the cold, inhuman teachings of Adam Smith and Dugald Stewart in relation to the treatment of the laborer or workingman. He said: "At all previous meetings of this association there has been an apparent inclination to avoid discussions of the labor question. Indeed, it has been generally understood that any allusion to it would be considered in bad taste. The reasons given by those who favored this course were, that the conditions of different localities precluded an intelligent discussion on the subject, and that it would be impossible to agree on a policy that would be beneficial to all. The events of the past year, however, have presented the subject in a new light, and it has been decided that we can no longer ignore the discussion of a problem in which we are all so vitally interested. Political history is not the only kind that repeats itself, and the circumstances that precipitated labor troubles in New York in 1890, seem just as likely to exist in Connecticut, Georgia or Indiana in 1891. The fact that New York was the chief seat of labor trouble during the past year, and that Mr. D. G. Harriman, of that state is so familiar with all its details, and is at the

same time a man of such fairness and intelligence, made him the choice of the executive committee to present this subject to you. Only his recent illness and necessary absence have forced upon you so poor a substitute.

“Labor troubles. Their name is legion, and their form too varied for any man to classify them, but they are all the offspring of one heresy—the belief that capital and labor are foes. With the relations between these two forces in their present tense condition, differences, however slight in their beginnings, may at any time become magnified, until a strike or lockout results. Sometimes it is due to the arbitrary rulings of the employer, sometimes to the persuasive arguments of a glib-tongued aspirant for leadership, whose objective point is a salaried position without labor, but by far the most prolific source of labor troubles is ignorance on the part of the employed. It is depressing in this intelligent age to see how slowly capital and labor grasp the idea that there is no diversity of interests between them. That what is good for the one is necessarily for the good of the other. Any temporary advantage gained by the one will always in the end react against him. Excessive wages and too great concessions on the part of the employer will not only result in financial loss to him, but such loss will be shared directly or indirectly by the laborer. On the other hand, the employer who adopts a niggardly policy in the matter of wages, or imposes unjust conditions upon his laborers, must pay the penalty in grudging service, or none at all.

“How then shall labor troubles be avoided? My answer is, after some experience and much reflection, there is no way in the present constitution of society. There is no cure for ignorance but education, and that is a slow process in a country where the untrained and vicious are constantly recruiting from the ignorant masses of the old world. But when diseases are incurable we administer palliatives, and it is only the hope of mitigating the evil, not abolishing it, that makes this discussion of practical use to-day. No remedy can ever be more than temporary that does not strike at the root of the trouble and prove that employer and employed have a common interest. So long as the capitalist looks upon the laborer as a mere machine, with neither intelligence nor independent rights, so long as the men look upon their employers as tyrants, whose only aim is to oppress and defraud them, no common ground can be found upon which to adjust their differences. This is not the country or the age in which to deny to any class of men the right to organize for their mutual protection and benefit. Indeed there are few who have given the subject careful consideration who will claim that the condition of the laboring man has not been improved by such organizations.

“Their history in England, in the great mining and manufacturing centers, where they were born of oppression and wrong, has vindicated their right to exist, and it would be worse than folly to ignore the force and significance of this great labor movement. It has made itself felt in all the civilized world, and it represents much intelligence and much of the spirit of justice and fair play, which we all indorse as sound business policy. But in America trades unions have too often been the tools of demagogues, and, subverted from their lawful purpose, have become the enemies of our business interests, and have forced upon capital the necessity of defensive organizations. Great trusts and combinations are the natural protests

of capital against trades unions. How terrible have been the battles fought by the two contending forces!⁶ They are fresh in the memories of all. Murder, arson and the wanton destruction of property became the familiar crimes of men who had hitherto been law-abiding citizens. Wasted fortunes, wrecked lives and blighted honor are the sad monuments of the contests. No doubt much of this evil could be averted by carefully drawn contracts, and much more adjusted by a system of arbitration, though the latter, to be effective, must be provided for before trouble begins. Neither of these expedients is new, and still the evil grows. One measure which has found favor with many of our wisest and most practical thinkers remains yet to be fully tried. Is it not time to thoroughly test the system known as profit sharing? Its results have already been such as to warrant further experiment, and while in the instances that have come under my notice, the success appeared largely due to the superior intelligence of the workmen, yet it would seem that the meanest intellect could see the advantage of working cheerfully to put a dollar into his employer's treasury, when he is sure that a definite fraction thereof, in addition to his daily wages, would go into his own pocket. 'All very well,' you will say, 'when there are profits to share, but how when there only losses?' The only answer that can be given to this question is, educate the men. No system involving a community of interests can ever succeed unless the laborer be trained in the first principle of political economy—the relation of supply and demand.

"Fortunately this kind of education need not be sought in the schoolroom. It is the common experience of life, and if some of the anxious hours employers now spend in adjusting difficulties with their men were given to their instruction in plain business principles, something might be done to bridge over the gap between the two factors in the problem, and to make the laboring man not a profit sharer only, but a willing sharer in all legitimate results of a business which engages the best powers of both employer and employed."

The power of organized labor becomes more manifest daily. In 1886 a constitutional amendment was adopted in Illinois to end the system of leasing prison labor. Its ratification was due to the incessant agitation of the workingmen, who claimed that certain trades, such as coopering, stonecutting, wagonmaking, etc., were ruined by the destructible competition of convict labor; that a manufacturer paying sixty-five cents a day for the services of prisoners was able to undersell employers of free labor who paid wages of \$1.50 a day or more. They reasoned it out that cheaper labor and cheaper goods were inextricably connected, and not to their advantage. Two courses were open to the coopers and others who believed their interests were affected injuriously by the contract labor system. One of them was to compete with it, to consent to a cutting down of their own wages to a point as low as that at which labor could be bought at the penitentiary. Had they done that the employer would have given them the preference, for their services would be infinitely superior. The other was to secure the passage of laws by which this cheap-labor competition should be done away with and the workingmen protected against it, even though its injurious effects were alleged to extend to a few trades only. The workingmen decided to do the last. They were not in love with the theory of cheap materials and houses for the community at their expense,

so after some years of agitation they had the amendment referred to adopted. Their influence for good depends upon the good will of a leader; for evil it is also dependent; but why stalwart men, endowed with intelligence, should follow every wind like leaves in September, is one of the mysteries of nature. Why a legislature would venture to regulate the time or remuneration of adult labor is a mystery of politics, passing into a crime when the venture is made a law.

The lien laws of 1845, and their amendment in 1874, 1883 and 1891, were all suggested by the men engaged in the building trades. The amendments to the lien law of 1891 were particularly recommended by the labor party. On February 26, of the latter year, the "arbitration bill" was introduced in the Illinois senate by O'Connor. The sections of the bill provide that in all cases where there is any difference or dispute between an employer and his employes in relation to any matter growing out of or connected with such employment upon which they can not agree, either party may appoint an arbitrator and notify the other party in writing of such selection. And the other party shall, within two days thereafter, select an arbitrator. And in case of failure on the part of such party to select such arbitrator within said two days, on application to any judge of any court of record in the same county (except the judge of the County court) by the party who has appointed an arbitrator; and on proof of such failure by the other party, the said judge shall appoint such arbitrator, and as soon as the two arbitrators are appointed, as provided above, they shall, together with the judge of the County court, constitute a board of arbitration, of which the county judge shall be chairman, to settle such difference or dispute. A majority of said board shall constitute a quorum for the transaction of all business coming before it, and the decision of such majority shall be binding upon all parties concerned.

The notice required to be given by the foregoing shall, when given to the employes, be served as follows: If the employes have an organization which, with their consent acts in the premises, then by leaving a copy with the president and also with the secretary of such organization, or at the usual place of abode. If the employes have no such organization, but have appointed a committee to represent them, then by leaving a copy with at least three members of such committee or at the usual place of abode. If the employes have neither such organization nor committee, then a copy shall be given to or left at the usual place of abode of at least one-fourth of the employes if there are less than forty, and one additional notice for every twenty-five men over forty, to be served on some employe as above provided. And, where notice is to be given by employes to employer as above provided, it shall be signed as above provided for serving notice, provided that when proceedings have once begun, and either party has appointed or appeared by an agent or attorney, notice signed by or served on such agent or attorney shall be sufficient. Notice may be served on the employer by leaving copy with him at his office or place of business, or at his residence. The arbitrators, or a majority of them, as soon as they have thus qualified shall proceed without delay and without pleading to inquire into the subject nature of the dispute; shall have power to administer oaths and a majority of them shall have power to send for such persons, books, and papers as

in their judgment it may be necessary to examine to fully understand the matters which they are to investigate. They may hold their meetings as in their judgment will be most convenient for all concerned, may go upon the premises of the employer and examine machinery, buildings, sanitary condition, and any other matter or anything of which there is any dispute between said employer and his employes. The board shall prosecute its investigations and conduct its business without delay, and shall, as soon as possible after the hearing, render its decision of matters in dispute, and the decision of the majority shall be considered the decision of the board. The decision shall be in writing, and shall state fully the findings and judgment of the board; and a copy of such decision shall be furnished the employer, and one copy shall be furnished the employes, and one copy shall be returned by said board to the county clerk. If at any time during the investigation either party shall ask for a consultation with a view to compromising, the board shall at once notify the other party and so arrange a meeting, and shall use its best endeavors to bring about a compromise or agreement; and in case such agreement is effected the board shall reduce the same to writing and shall give and return copies as in case of a decision. If at any time an employer shall state to the board that he would be injured by having publicity given to any matters which the board may deem necessary to inquire into, then the inquiry as to such matters shall be conducted secretly, permitting no person to be present, except such as the board may find it necessary to call in to explain things or assist in order to fully ascertain the truth, but the persons so called in shall be sworn to secrecy. And if such person or any member of the board shall divulge any such secret he shall be deemed guilty of a misdemeanor; but the board, in making its decision, shall consider the information thus obtained and act upon it, although it shall not give publicity to such information further than may be necessary. The arbitrators, having first given a copy of their decision to both employer and employe shall return their appointment, their oath, and a copy of their decision signed by them to the clerk of the County court of the county in which proceedings were begun, who shall file and preserve the same and shall spread the decision on the judgment records, for which latter service he shall be paid the fee allowed by law for recording, and no other fee shall be charged by him. The decision may be amended on notice at any time as to all points upon which it may be found to be informal, uncertain or defective. And it shall from the time it is so filed or amended, without further notice, operate as an injunction and restraining order for one year on employer, his agents, and foremen, and employes as follows: •

The employer shall be enjoined from employing any other men until he has first given all of those who are employes at the beginning of the trouble an opportunity to resume work in accordance with or on the terms and conditions named in the decision of the arbitrators. But he need not wait longer than two full days after a copy of the decision has been given to both employer and employes for such old employes to present themselves to go to work. After the two days he can employ whom he pleases, but shall not without new cause discharge any of the old employes who did return in said two days and fill their places with others, except as follows: By giving them two weeks' notice in advance he may discharge not to exceed one-tenth of his employes working in the same line in any one month and fill their

places with new employes, provided, however, that if he shall not start or give the former employe an opportunity to resume work within the two days, and should desire to start thereafter, then, before employing any other persons to work in the same line, he shall give the former employes an opportunity to return to work on the same terms and conditions specified in such decision, and for this purpose shall give ten days' notice as follows: He shall post five written notices in public places in the neighborhood of his factory or establishment where the men are to go to work, and shall give a written notice to the officers of the organization of such employes, if they have one. Every violation of this act shall be deemed a violation of said injunction, and shall be punishable accordingly; and shall also be and constitute a misdemeanor and be punishable under the criminal code.

In cities where the system of paying for labor by the hour is not in vogue, there is some query as to just what the system includes.

In Chicago, ever since the great fire of 1871, nearly all contractors have been in the habit of paying for their labor by the hour instead of by the day. By the old custom of paying by the day, still in almost general use, the day was made the unit of time and of payment. A quarter of a day was made the smallest division of this unit. If a man did not work a quarter of a day he received no pay. If he worked over a quarter of a day he received pay for a half day, etc. This is unjust to the laboring man who works but an hour and is suddenly called away. It is equally unjust to the contractor who pays for half a day when he only receives but a little over a quarter. In the payment by the hour system the hour is made the unit of measure and all time is kept by the hour. If a man works less than half an hour it is not counted. If he works over half an hour he is credited with an hour. The number of hours in a day's work does not affect the system at all, and all contractors reserve the right to work as many hours as is necessary and agreed. Overtime is credited as time and a half, and Sundays as double time. A man leaving work without permission is discharged, but when he leaves with permission he is paid for exactly the amount of work he has accomplished. This is all there is to the payment by the hour system. Those who have tried it like it infinitely better than the old method.

The effect of the great uprisings of laboring men in 1877, 1886 and 1887 was so blighting that the bare suggestion of strikes is enough to throw many people into a panic. The influence of the labor unions and agitation of the question of the workingmen's condition during the past twenty years, have, however, had a wonderful educating effect, and such outbreaks are much less an occasion of alarm than formerly. Wagerworkers are not now so blind that they can not see a limit to the exactions which capital and enterprise can bear. They can not fail to perceive that they have relatively gained very much in the division of the product of combined labor and capital.

During the last few years labor and capital in Chicago are both better organized than ever before. Manufacturers and employers have their organizations as well as mechanics and employes. A feature of the period is that organization treats with organization, and instead of either side being at a disadvantage compared with the other side so far as

organized effort goes, the two are very nearly on a par. This state of affairs is best both for employer and employe. It settles questions promptly and reaches conclusions in a way to avoid prolonged disputes and loss from interruption of industries. In the foundry business there have been a few strikes; some of them have become public and others have been managed so quietly that very few outside of those immediately interested have known that they were in progress. Nothing has occurred that has demanded the attention of the National Defense association, and in this respect the years have been uneventful. In the cornice and roofing trades some very serious disputes have arisen, and there has been a stoppage of work in different parts of the country, covering considerable periods of time. In some instances the agreements which have been affected as the result of these strikes promise to be advantageous both to employers and employes. The general progress of labor affairs throughout the year has been in the direction of a reduction of hours. Many cities which have heretofore been known as ten-hour cities have become nine-hour cities, and some nine-hour places have become eight-hour places. The eight-hour day as yet is by no means universal in the trades in which our readers are concerned, and it is not only possible but probable, that disputes concerning the adoption of shorter hours, where nine and ten hours now prevail, are to arise in the near future. Employers, however, very generally recognize the fact that it makes comparatively little difference to them whether their workmen labor eight hours or ten hours, or whether they pay them one price or another price per day, so long as all their competitors work upon the same basis. The greatest difference that it can make is to raise the price of goods to such a point that the public will refrain from buying; but this consideration does not come up as often as that of uniformity. Inequalities are what employers are most particularly concerned in avoiding. With the organization of labor into different unions, and with each different class of mechanics in its own union, there has come about a division of labor in building operations that causes trouble and expense in certain ways beyond anything ever before experienced. No man is allowed to do that which by any consideration belongs to some other man, and each mechanic, in a sense, waits upon his brother mechanic. This aggressive organization of labor absolutely calls for the organization of the employers of labor. The stream of unionism has assumed such gigantic proportions that any employer who attempts to cope with it single-handed will be remorselessly swept away. The necessity of handling the subject in a careful and considerate manner has forced itself on mechanics, and no longer do they attempt to rule the laboring men without reason. They are wise enough to take advantage of favorable tides in this mighty stream of organization, and have guided their destinies much better than some employes who foolishly committed themselves to retaliatory action.

While a protective union is lawful and perhaps necessary, there are some things very objectionable in the system. It has been truly said that the greatest stumbling-block, in the way of a satisfactory solution of the standing which labor unions should have in the estimation of employers, is the incompetence of many laborers who are placed by their labor unions on the same plan as the competent men. The rule of payment only for value received is broken

every day by every union in the land. The incompetent laborer has everything to gain by identifying himself with the labor bureaus, while the competent man has but little, if anything, to gain by such a connection. The competent laborer is, as a rule, a man who loves his home and spends his spare time in the society of his family. His work is done conscientiously during the day, and he goes home at night with an easy conscience and a happy heart. The man has no time to spend about saloons and labor halls. The incompetent man, however, is a botch by day. He neither does his work so well nor so rapidly as the competent man, and he realizes that he must secure equal wages on some other plea than for adequate compensation. So he works the union and protection dodge. He talks it by day to his brother workmen when his own hammer lies idle in his hand. At night he goes to seek the congenial society of other botches, and he knows where he will find them—either at the saloon or at union headquarters. He, with others of his ilk, organizes into a union and forces his fellow-workmen into it by the fear of the occurrence of a strike or lockout without benefit funds. The competent men who stay at home and away from the meetings, permit the demagogues to make rules which they blindly follow through their love of peace and fear of personal harm or ostracism. The incompetent man is only too glad to demand the same wages his competent brother receives, and if he does not get his demands granted by the employers, he will at least get the benefit allowance, and that keeps the tap running. This is a perfectly fair presentation of the case, and when the contractors insist on adequate payment for actual services rendered, and refuse to listen to or grant any uniform scale of wages, that moment the greatest menace to organized employes and to organized employers will be wiped away. The first duty of organized labor is to make merit the basis of reward. Could competent workmen realize this they would undoubtedly cut loose from the incompetent men. There are individuals who, in themselves, would disgrace a nation, and unfortunately for labor, many of them creep in labor associations. Exclude them! Cut them off! Without such irresponsible beings the labor circles of the country would take on a power and a dignity, hitherto unknown.

The Bricklayers' hall is the first building erected by a tradesmen's organization at Chicago. It was conceived in 1886, completed after the great strike, and is now the property of the forty-three hundred and eighty-five men belonging to the union. The purchase of the grounds and the fact that plans for a building were accepted before the strike of 1887, had much to do in bringing that lamentable affair to an early conclusion. The lack of funds in the treasury of the union was the prime cause of their appointing a committee on arbitration in July, 1887, but the filing of a petition for a mechanic's lien, by Architects Donnellan & Nothnagel, upon the lot owned by the union, at the northwest corner of Monroe and Peoria streets, and on which they proposed to erect a new building, was a significant factor, as it precluded the possibility of their negotiating a loan, by mortgaging their property, and resulted in bringing the existing trouble to an end. The plans of Donnellan & Nothnagel for the new building were accepted by the union last December, and in January the union entered into contract with them, whereby they agreed to pay them five per cent. of the cost of the building, which was estimated at

\$40,000, for the plans and for supervising the erection of the building. If the building was abandoned and did not go on, they were to receive three and one-half per cent. for their plans. Early in May the officers instructed the architects to receive bids for the erection of the building and to proceed with the work. Bids were received. Some time after this the architects asked for some money, a part of their commission, on account. No reply was received from the union. On June 17, the day of the night on which the regular meeting of the union was to take place, a communication was sent in, again asking for money. The following Saturday nothing whatever could be learned of the disposal of the communication. The officers were reticent and refused to say anything about the matter. Rumors were current that the union was about to mortgage their lot for \$8,000, with which money they proposed to prolong the strike. The following Monday Donnellan & Nothnagel filed a petition for a mechanic's lien upon the lot, and afterward brought suit in the Circuit court for \$2,500. The treasury of the union was at ebb tide. This was the last straw, and their last hope had faded. At the next meeting, which occurred the following Friday, they appointed their representatives to arbitrate the difficulties pending, and the result is known to all.

Within the past few years quite a large number of firms have adopted the profit-sharing system with their help, and so far it has not only proven successful as a system, but has had a most beneficial effect upon the workmen. This is noticeable in several ways. In the first place, it increases their interest, and tends to make them better workmen, for they are, so to speak, members of the firm, and have an individual interest in the prosperity and standing of the concern. Then it tends to make them more careful of their individuality. They become better citizens and more intellectual and refined. They have an object in life, and feel that they are living for some purpose. It insures a closer attention to business, and almost if not wholly does away with labor troubles. They feel as though their employer had some interest in them beyond what he can make out of their labors. Besides all this, and what is perhaps quite as praiseworthy, it teaches them a lesson in business principles that may be of use to them in the future. The plan has been tried in France, England and the United States with the best results. Though the share of labor in the net money product of manufactured goods has increased from 2.53 in 1850 to 4.13 in 1885, as compared with the share of capital—1. in 1850 and 1885—and though the workingmen are better organized and better educated than they were forty years ago, their progress has not kept pace with that of the employers or of the country; so that a change to profit-sharing becomes the philanthropist among the capitalists if it is not actually a requirement of modern economical ideas.

Now labor is to have a temple to point to its successes. This is not to be simply a "hall," as the Bricklayers' union have on West Monroe street, it is to be a modern stone, brick and terra cotta "skyscraper," twelve stories high and 100x125 feet in area, containing auditorium, hotel and stores. On the second floor the main hall and auditorium will be located. The hall will accommodate three thousand persons. The first floor will be devoted to a series of stores. In the other stories there will be a series of halls and assemblyrooms, suitable for the general offices of the various labor organizations. There will also be a library and read-

ingroom. Down in the basement the hotel offices and baths will be situated. The upper stories will be used for the purpose of accommodating the guests of the hotel.

The officers of the Trade & Labor assembly in May, 1891, were Robert T. Swallow, president; J. N. Ballou, vice president; William Ralph, recording and corresponding secretary; Milo S. Peyton, financial secretary. The organizations represented are United Order of American Bricklayers and Stonemasons; United Brotherhood of Carpenters and Joiners of America, Local Union No. 1; United Brotherhood of Carpenters and Joiners of America, Local Union No. 23; United Brotherhood of Carpenters and Joiners of America, Local Union No. 28; United Brotherhood of Carpenters and Joiners of America, Local Union No. 62; United Brotherhood of Carpenters and Joiners of America, Local Union No. 73; United Brotherhood of Carpenters and Joiners of America, Local Union No. 141; Amalgamated Society of Carpenters and Joiners, Branch 1; Amalgamated Society of Carpenters and Joiners, Branch 2; Amalgamated Society of Carpenters and Joiners, Branch 3; Architectural Iron Workers, No. 1; Curriers' Protective union; Tin and Sheet Iron Job Workers; Tanners' union, No. 1; Tanners' union, No. 1; Stereotypers' union, No. 4; Wool Workers' union, No. 5107; Gas Fitters' association; Cloakmakers' union; Clothing Cutters' association, No. 2424; Machinery Constructors' association, No. 5134; Consolidated Musical union; Brotherhood of Painters and Decorators, No. 191; Brotherhood of Painters and Decorators, No. 194; Brotherhood of Painters and Decorators, No. 184; Plasterers' Benevolent and Protective society; Press Feeders' (Brotherhood); Street Railway employes; Stair Builders' union; Sash, Door, Blind and Mill hands; Typographical union, No. 16; Typographia, No. 16 (German); Cigar Makers' union, No. 14; Cigar Packers' union, No. 227; Coopers' union, No. 22; Cornice Workers (metal); Ladies' Federal Local union; Harness Makers' union, No. 12; Lead Glaziers and Glass Cutters; Machinists and Machine Blacksmiths; Iron Molders' union, No. 23; Iron Molders' union, No. 239; Brass Molders' union, No. 1; Marble Cutters' union; Brotherhood of Painters and Decorators, No. 147; Machine Wood Workers' International union, Local Branch No. 4; German Musical union, Columbia band, Slavonian band, Aurora band; Boiler Makers and Iron Ship builders, Charles Sumner Association of Colored Waiters, connected with Chicago Culinary Alliance; Chicago Waiters' union, No. 1, connected with Chicago Culinary Alliance; Chicago Waiters' assembly, No. 7475, Knights of Labor, connected with Chicago Culinary Alliance; Independent Oystermen and Waiters' union, connected with Chicago Culinary Alliance; Meat and Pastry Cooks' union, connected with Chicago Culinary Alliance; Germania Waiters' association, Chicago Waiters' league, German Waiters' and Bartenders' Columbia association.

The growth of labor organizations in Chicago for the year ending August 31, 1891, is phenomenal. The *Tribune* states on authority that it has never been equaled here. A reasonable estimate of the number of members in good standing of the various unions in the city would be one hundred and fifty thousand. There are about twenty-five thousand women and girls employed in manufacturing trades in this same territory. Organization is only beginning among them. The trades they work at are on wearing apparel, paper boxes,

in binderies, on gloves, canning of food, pickles, meats, fish, etc., fine shoes for women and children, paper bags, envelopes, and other paper goods. In mode of organization there has been a great change from Knights of Labor to the American Federation of Labor. The former is still conceded to be the greatest educatory organization of wageworkers in the world, but the federation is outfooting them, because it preserves the autonomy of trades, while the Knights' assemblies are mixed or composed of different trades, the interests of which are not so nearly identical as to enable them to work together to as good advantage as under the federation system.

The federation, now the most powerful labor body in the world, has one million members. The Knights of Labor rank next as to membership. Then there are many strong independent bodies modeled on the plan of the federation, but not federated with it. Among these are the railway employes, with several branches and a central body; the bricklayers of Chicago, six thousand strong; street railway employes, about six thousand in number; iron and steel workers, who, in their annual national convention, fix their wages for the year ensuing by mutual conferences with employers; the glassworkers, the clerks of dry goods and notion stores, meatmarkets and groceries. The strongest central bodies in the city now are the Trades Labor assembly, composed of delegates from one hundred unions; the Building Trades council, in which there are twenty building trades. This is of recent growth, has practically been built during the year, and is making rapid strides for first place among the central bodies. The Central Labor union, composed of trades whose mechanics are Germans, is a strong body, and is numerically larger and more prosperous now than ever before. The District assembly, Knights of Labor, still leads in its educative advantages. There are about three hundred labor unions in the city.

The compact organization and numerical strength of the unions have been such as to cause during the year many classes of employers to organize to oppose the unions. Their organizations in some instances have developed into trusts. Some are very powerful. Among those widely known, some of more than a year's growth, are the furniture manufacturers, distillers, brewers, rubber goods manufacturers, and many which are surrounded by the most absolute secrecy. A movement has just been started in San Francisco to form a national body of these united employers of labor with branches in all large manufacturing cities. This will probably be perfected during this year, though no steps have yet been taken in Chicago toward it. As to the eight-hour working day the unionists who are just over from the old country care not so much about it as they do for high wages. The Americans, or rather the foreigners who are not so new to this country, are the ones who are sticklers for the eight hours and the leisure it affords, and they care less for the high wages. The eight-hour fight started from the Baltimore convention in 1866. In 1867 the stonecutters won it in Chicago. In 1886 the bricklayers secured it. Later the carpenters, painters, and other building trades won it, though in factories with the last written trades ten hours is still the rule. Twenty thousand men at the Stockyards won it, but lost it through the intervention of public and private armed bodies. During the year Chicago has had a marvelous growth

in manufactures in the lines of iron and steel, brass, lumber and woodwork, furniture, picture frames, sash, doors and blinds, printing and publishing. The additional number of employes thus demanded has been several thousand. The old-time boycott and blacklist, used so extensively and savagely by unionists a few years ago, has been practically dropped by Chicago wageworkers. The boycott is a tramp now on Chicago streets begging for a meal or a job. The labor year, ending August 31, 1891, was very peaceable, there having been comparatively few strikes. The movement has been toward mutual conferences and arbitration. Both employer and employe realize there is little in strikes. The age is outgrowing it. In the few strikes the men were generally successful. The cigarmakers won their demands in a ten-week strike; the architectural ironworkers, while they lost the strike as to the full demands, gained many concessions. They numbered fifteen hundred men, had been organized less than a year, and, though they made a strong fight, lost. Of the minor dozen strikes the men were in the main winners. The great labor convention, held at Chicago in 1887, ordained "Labor day," and since that time many of the states have added the sanction of law to the ordinance of laboring men.

Thus fifty-nine labor organizations work under one management to secure the ameliorations of wrongs which may exist and to oppose threatened wrongs. The power, when directed truly, is immense, but like any confederate arrangement, where each union is sovereign, the federal power of employers is more effectual, and hence the minority, or the employers, are capable of upholding their rights against the majority, or the employes. Education, experience, the power of capital and certain ideas of toleration are generally wanting in the case of employes, while they are present in that of the employer. They carry with them perspicuity, vigilance and a sense of the influence of united action, so that the numbers of employes do not confer the power which intelligent organization is capable of conferring; nor will such numbers hold a controlling power until right and justice and charity to all are made the fundamental law of the central and local associations.

Thrice is he armed who hath his quarrel just,
And he but naked, though locked up in steel,
Whose conscience with injustice is corrupted.

CHAPTER XVIII.



ARCHITECTS AND ENGINEERS.

John M. Van Osdel, the pioneer architect of Chicago, was born in Baltimore, Md., July 31, 1811. His father, James H. Van Osdel, a native of New York, an architect and builder, engaged extensively in building in Baltimore. The Van Arsdale family derive their origin from Jan Van Arsdale, a knight of Holland, who, in 1211, built the castle Arsdale, from which he took his name. From him descended Lyman Jansan Van Arsdalen, as he subscribed himself, who emigrated to the state of New York in 1653, and he was the founder of the families of Van Arsdale and Van Osdel in America. He lived at Flatbush, Long Island, where he served as a civil magistrate and an elder in the Dutch church. The records prove him to have been a man of means, education and influence. He died about 1710, leaving two sons, Cornelius and John, and from the latter the subject of this sketch is descended. Mr. Van Osdel enjoyed the advantages of a private school until his fourteenth year. As an incident of his boyhood and to show how early his quality manifested itself it may be related that during a time while his father was temporarily disabled, the lad saw that such assistance as he could render toward the family support would be useful aid, he purchased a pine board and from it manufactured stools which he sold to the neighborhood. With his profits he purchased more material and repeated the sales, realizing a handsome per cent. above the cost of his products. Such a boy was destined to become a man whom the world would honor. Upon the recovery of his father, the family removed to New York, and young Van Osdel began to work regularly under his father upon the latter's contracts for carpentering and building. Gaining admission to the Apprentice's library and being passionately fond of reading, he devoted all his spare moments to the acquisition of general knowledge, the study of architectural works and mechanical science being his chief delights. When he was seventeen years old his mother died and the family was broken up. He now secured his release from obligations to his father and in a small way engaged in the business of architect and builder. At the age of nineteen he taught an evening drawing school, where he illustrated the geometrical rules applicable to stair building and other difficult parts of house carpentering. This school was a source of great pleasure and profit to him. In 1831 Mr. Van Osdel married Miss Caroline Gailer, a daughter of James Gailer, of Hudson, N. Y., and returned to his native city, Baltimore. There he was engaged success-

fully as a master builder until 1836, when he again took up his residence in New York. In the same year he made the acquaintance of W. B. Ogden, of Chicago, furnished him plans and specifications for a fine residence to be built in this city and engaged to construct the building. Much of the joiners' work for this was prepared in New York and forwarded to Chicago, where Mr. Van Osdel arrived with his family, June 9, 1837. This house was erected on Ontario street. Mr. Van Osdel also turned his attention to ship joinery, and we mention as of historical interest that he furnished two of the first vessels ever built in Chicago. These were the steamboats "James Allen" and "George W. Dole." In 1839 he constructed several large pumps on the Archimedean screw principle, for lifting water out of the excavations for the Illinois and Michigan canal, then in process of construction.

In the following winter he invented a horizontal wind-wheel, which was used very successfully in working these pumps. In the fall of 1840 Mr. Van Osdel removed to New York, in the hope of benefiting his wife's health, which had been failing since her arrival here. The publication of his work on carpentering had earned him an excellent reputation in the East, and he was offered the position of associate editor of the *American Mechanic*, published in New York, now the *Scientific American*. He accepted this offer, and remained there through the winter, but the confinement of office work proved injurious to his health, and, as that of his wife was somewhat improved, he decided to again try the field of the West, and the spring of 1841 found him again a resident of Chicago, and since that time he has been uninterruptedly connected with its prosperity and its adversity. In 1843 he entered into partnership with Elihu Granger, in the iron foundry and machine business. Finding this unsatisfactory after an extended trial, he was induced by the principal builders of the city to open an architect's office, the first one in Chicago. His masterly skill was rewarded by an income of \$32,000 for three years' service, for the three years ending 1859, his business having rapidly increased to that magnitude. A great many of the finest business blocks, public buildings and residences in existence in this city before the fire, were designed by Mr. Van Osdel, and erected under his supervision. He also erected a large number of buildings in other parts of the state. The finest three residences in Illinois, namely, those of Peter Schuttler, Ex-Governor Matteson and Ex-Governor Wood, were erected by him. At the time of the fire, Mr. Van Osdel hastened down to the city in time to remove his library and other valuable effects to his branch office on State street. In this office were the plans and drawings of the Palmer house, which he had lately prepared. It soon became evident that this office would be included in the general destruction. Mr. Van Osdel therefore caused a pit to be dug in the sand, piled up in the basement of the hotel, and placed therein all his books, instruments and papers, together with the valuable drawings of the hotel. Over them the sand was thrown two feet deep. This hastily improvised safe preserved all of its contents perfectly. The next day he rented a suite of rooms in the Nixon fireproof building, at Monroe and La Salle streets, which stood amid the surrounding desolation as a monument to human foresight and the advancement in architectural methods. Mr. Van Osdel's prompt action showed his unbounded faith in the future of Chicago. In less than four months he was obliged to move to more com-

modious quarters, to accommodate the draughtsmen required to fill the multitude of orders thronging in upon him. In eighteen months he designed and superintended the erection of eight thousand feet front of first-class buildings, which, if placed side by side, would make a magnificent street of more than a mile and a half in extent. Numbers of the most elegant structures in the city are specimens of Mr. Van Osdel's genius and skill. Among many others are the Palmer house, the Tremont house, the Oriental and Kendall buildings, Hawley's building and the McCormick and Reaper blocks. In consequence of the pressure of engagements coming so rapidly upon him after the fire, the strain upon Mr. Van Osdel's nervous system became too great, and he was obliged to desist from his exclusive labors and devote himself to rest and recuperation. Accordingly, in May, 1873, he took a pleasure trip to Denver, San Francisco and the Yosemite valley, accompanied by his wife and two daughters. In May, 1874, they sailed for Europe, spending a year very enjoyably in visiting many of the cities and places of interest in the Old World. Mr. Van Osdel returned rejuvenated and in perfect health, and at once reëngaged in his profession with his wonted energy and enthusiasm. Mr. Van Osdel was appointed a member of the Customhouse investigation committee some years since, and his report as chairman of the committee gave great satisfaction. His active interest in all matters tending to advance the public good led to his being made one of the trustees of the Illinois Industrial college at Champaign. He served his term of six years, and was commissioned by the governor to be his own successor for another term. But by a change in the law, reducing the number of trustees, his place was vacated. So long as the country required the existence of the abolition party, Mr. Van Osdel was one of the party's ardent supporters. For years his vote was enumerated among the "scattering." In 1860 he joined the Republicans, and participated actively in all their measures of reform. He prepared and published at his own expense a comprehensive address against the issue presented by both wings of the democratic party. He also wrote a number of poems suitable to the times, which possessed merit. Several important nominations were offered him, but he refused them all, having no desire to enter the political arena. Mr. Van Osdel's first wife died in February, 1845, and in 1846 he married Miss Martha McClellan, a daughter of James McClellan, of Kendall county, Ill. He has no children of his own, but has adopted four orphans—three girls and a boy. For the past twenty-five years Mr. Van Osdel's nephew, J. M. Van Osdel, Jr., has been identified with this old architectural office. He was born in New York City, January 13, 1838, a son of William C. and Harriet Van Osdel, who moved to Chicago in 1839 when he was a year old. He was educated in the common schools, afterward working for a time with his father, who was a builder and contractor. In the fall of 1861 he was among those who responded to the call for troops, and enlisted as a private, in Company K, Fifty-ninth Illinois volunteer infantry. He was early promoted to first sergeant, and August 11, 1862, received his commission as first lieutenant, the promotion being made for meritorious service rendered at the battle of Pea Ridge, the first heavy battle in which the Fifty-ninth was engaged. The company participated in the campaigns of the Army of the Cumberland, and was constantly engaged in marching and fighting, encountering most severe

service. September 30, 1864, Lieutenant Van Osdel was promoted to the captaincy of Company K. He received his final discharge from the army December 8, 1865. Although he participated actively in many of the heaviest battles of the war, Captain Van Osdel never received a wound. Returning to Chicago, he entered his uncle's office, becoming a partner in the business in 1872, after the great fire. After acting as his uncle's confidential partner for a quarter of a century, he has now full control of the business, thus relieving its venerable founder in his declining years almost entirely of the care of the work in detail, though Mr. Van Osdel, Sr., will be at the head of the business as long as life is spared to him. J. M. Van Osdel, Jr., was married February 29, 1863, to Miss Catherine A. Anderson, of Dixon, Ill. They have six children living and three dead. Captain Van Osdel is a member of the military order of the Loyal Legion, as well as of the Chicago Chapter of American Institute of Architects.

Prominent among the architects of note in Chicago, and almost the first to undertake this profession in the West, is Edward Burling. Mr. Burling was born at Newburg, Orange county, N. Y., April 24, 1819. His father, Nathaniel Burling, died when Edward was but nine years of age. His boyhood was spent at farm work in New Jersey. At the age of fourteen he returned home and became an apprentice at the carpenter's trade. Not content with being merely able to handle the saw and plane skillfully, his busy mind was planning and devising while his hands were employed. At twenty years of age Mr. Burling took a contract for the erection of a house, this being his introduction to the building business. He followed this occupation in his native town until 1843, when he came West and took up his residence in Chicago. His first work here was in assisting in building the old Tremont house. The following year he contracted to build a house for Eli B. Williams, on the corner of Wabash avenue and Monroe street, which was known as the "Maison Doree." He followed this business until 1846, and was then employed by Messrs. Ogden, Jones & Co., as manager and general superintendent of all their outside business, having in charge their buildings, lumber, etc. He was afterward employed by the late Gen. J. D. Webster to superintend the building of the Marine hospital. At the completion of this work Mr. Burling opened an office and established himself as an architect, Mr. Van Osdel being at that time the only other architect in the city. His earliest patrons were Judge H. T. Dickey and Hon. J. Y. Scammon, for whom he designed a block of stores on the north side of Lake street, opposite the Tremont. This business he has since continued with success. Previous to the great fire he had accumulated considerable property, all of which was then swept away, leaving him the only alternative of beginning anew. His transactions since the fire have been large. Mr. Burling was appointed one of the commission of architects to examine and pronounce upon the Customhouse buildings, and was afterward selected as superintendent of the same; and he was elected a county commissioner for Cook county and served a term of three years with credit. He is by nature generous, and few stand higher in the list of Chicago's prominent, charitable, high-minded and upright citizens.

A leader among architects of Chicago is William W. Boyington, a man of unusual talent,

a leader not only among architects, but an acknowledged leader in the great architectural reform which has rescued Chicago from the fate of so many western cities and lined her streets with so many monuments of genius and enterprise. Mr. Boyington's distinguished characteristic and the real secret of his success is a taste and disposition for real, combined with the perseverance that carries to a successful issue every project he undertakes. He was born July 22, 1818, in the town of Southwick, Hampden county, Mass., a son of Juba and Aurelia (Campbell) Boyington, both children of the earliest settlers of Southwick. His parents lived in Southwick until he was sixteen years of age, and there he received a common-school and academical education. In 1834 they removed to Springfield, in the same county. About this time he began learning the trade of carpenter and joiner under his father. He worked so faithfully and earnestly that at the end of two years he received a full journeyman's wages. His evenings he spent in studying architectural works, and his ambition was to thoroughly master in both theory and practice all the details of his business. He was so far successful that at twenty years of age he became foreman for Charles Stearns, an extensive builder and lumber dealer. Mr. Boyington had entire charge of both branches of the business, and had thus an opportunity to exercise his architectural skill and also to obtain a knowledge of the qualities and relative values of the various grades of building materials. At the age of twenty-three he began business for himself as a builder, and continued very successfully for three years, when his shop burned down and his tools and materials were entirely destroyed. Nothing daunted he brought all his energies into play and quickly built a new shop to which he soon added a planingmill and a sash and door factory. Not long after this he entered into a partnership arrangement under the firm name of Deere, Boyington & Co., which continued very prosperously for five years, when the firm's buildings and machinery, and their stock of lumber, one of the largest in that section, were swept away by fire. The buildings were again rebuilt, but Mr. Boyington soon after sold out his interest and devoted his whole time thenceforward to architecture. He was elected a member of the Massachusetts state legislature in 1850, and appointed chairman of the committee on public buildings. He came to Chicago in the spring of 1853 to look over the ground with a view of locating if prospects for his business should be promising; and a few months later he closed up his affairs in Massachusetts, and in November came to this city. His first work was to make a plan of the ground on which the Central Union depot was afterward built, and a design for the buildings. His ability soon became known and his success in the subsequent twenty years is unequalled in the history of any architect in the United States. As a proof of this statement we have only to consider the large number of magnificent churches, splendid public buildings, hotels, schoolhouses, etc., and miles of business blocks, including a majority of the marble fronts in the city which originated in his brain and grew into forms of grandeur and beauty under his watchful eye. He was the architect of the following churches in Chicago: St. Paul's Universalist, First Presbyterian, Wabash Avenue Methodist Episcopal, First Baptist, North Presbyterian, Centenary Methodist Episcopal, Ada Street Methodist.

Besides the above, many churches scarcely inferior to these have been erected from Mr.

Boyington's designs, in the states of Michigan, Ohio, Pennsylvania, Indiana, Iowa, Wisconsin, and in many of the Illinois cities. Among the hotels planned and erected by Mr. Boyington are the magnificent Grand Pacific hotel, the Sherman house, the Metropolitan hotel, Leland hotel, all of Chicago; the Brewster house, Freeport, Ill.; the Ottawa hotel, Ottawa, Ill.; Windsor hotel, Montreal, Canada; Windsor hotel, Denver, Colo.; Grand hotel, Pueblo, Colo.; Antlers hotel, Colorado Springs. Among the public buildings for education, railroad, reformatory and other purposes, are the University of Chicago and Dearborn Observatory, the female seminary at Hyde Park, the female seminary and convent of the Sisters of Mercy; the buildings and tower of the Chicago waterworks; the fireproof buildings of the land department of the Illinois Central railroad; the Grand Union depot of Chicago, Rock Island & Pacific and Lake Shore & Michigan Southern railroad companies, which is second to none in the United States as to extent, convenience and general appearance; Crosby's Operahouse and art buildings, one of the finest buildings of the kind in the world; Farwell hall building, Masonic hall and Oriental building, all of which were erected previous to the great fire. He also designed and built an extensive high school building at Des Moines, Iowa; the fireproof jail of Pike county, Ill.; finishing the Illinois State House at Springfield, Ill. The Illinois State penitentiary at Joliet was constructed principally under his charge. Of the long line of magnificent business blocks and marble fronts in Chicago designed by Mr. Boyington the following are a few: Bower Brothers' and McKay Brothers' marble front blocks; McCormick's and Farwell's marble blocks; Wadsworth and Keep's and Mills; Follensbee & Company's marble blocks on Lake street, also many rows of brick buildings of plainer design for wholesale purposes. When the great fire of October 8, 1871, which burned over two thousand two hundred acres, and swept out of existence twenty thousand buildings worth over \$75,000,000, had done its work, a vast field was opened for the exercise of the talent and enterprise of Chicago architects and builders. Foremost among those who strove to lift the young giant from the ashes and restore the city to its former greatness was Mr. Boyington, and in rebuilt Chicago, now many times more magnificent than before, are many enduring monuments to his creative genius. The total value of buildings designed and constructed under the charge of Mr. Boyington in the year succeeding the fire aggregated \$5,815,500. We can hardly conceive how one man could accomplish so much in one year and exercise a personal supervision over all, and only the most rigid system of method and order in all departments of work could have produced such gigantic results. Following are the names of the principal of those structures: The Grand Pacific hotel, the depot of the Lake Shore & Michigan Southern railroad company, and the Sherman house, which were destroyed by the great fire, were built a second time under Mr. Boyington's supervision; the Leland hotel, McCormick's block on Wabash avenue, McCormick's hall, the exposition building, which was completed in ninety days from the time that the first pencil stroke was made on the plans, and at a cost of \$275,000; the United States Express building, the Boise block, Bowen Brothers' block on State street; the Superior block and the Quinlan buildings on Clark street. These were all

marble or stone fronts, while block after block of buildings on South Water, Lake and other streets, erected for commission and wholesale business, less ornate, but substantial brick blocks were designed by Mr. Boyington. Among the more recent buildings of note may be mentioned the Chicago & North Western railway passenger station, Big Four Union passenger station at Cincinnati, Ohio; remodeling the Chicago, Rock Island & Pacific, Lake Shore & Michigan Southern and Union depots; the magnificent Board of Trade of Chicago, the Royal Insurance Company office building, both of granite, and the first granite buildings erected in Chicago; a granite church at Kenwood for the United Evangelical church; a bolder rock-faced stone church of magnificent proportions for the Second Presbyterian church at Peoria, Ill.; superb granite residences for John A. Davison, Calumet avenue, also for C. H. Case on Ashland avenue, and A. St. Lawrence; marble residence for C. H. Smith on Forty-fifth street and Drexel boulevard, the cost of the three last-named, including stables, aggregating \$200,000. Mr. Boyington was married at the age of twenty-one to Eunice B., daughter of Jacob Miller, of Springfield, Mass. They, with their children and friends, celebrated their silver wedding December 29, 1864, and golden wedding December 29, 1889. Mr. Boyington is truly a self-made man, and one of whose character and achievements Chicago is justly proud. He is still in the van in the march of enterprise and improvement, and is recognized as one who, in senses other than the literal one, has done much toward the building of the city, whose chief interests have, ever since he took up his residence here, had his thoughtful attention.

H. B. Wheelock, architect, is a son of Otis L. Wheelock, who was for many years a leading architect of this city, and who designed and erected many handsome buildings here. He was often called "The Old Veteran Architect," and only retired from business about seven years ago, being now a resident of San Jose, Cal. During his association in business with W. W. Boyington, he designed the Baptist Theological seminary on Cottage Grove avenue, now torn down, and the Joliet penitentiary; after the fire he was in partnership with C. P. Thomas, the firm being known as Wheelock & Thomas, and this firm existed many years. O. L. Wheelock's most important work was accomplished after the great fire, designing and erecting the Bryant block, Bookseller's row, Peter Page block, Honore block, Holland & Unity blocks, the merchant's building, the Union building, the First Regiment armory, Woodruff hotel and numerous others. Mr. Wheelock was also associated with W. W. Clay until his retirement from business, and during this time they planned and put up many beautiful residences throughout the city, among which may be mentioned the homes of M. D. Wells, F. G. Logan, Judge Harry Hammer, Edwin Partridge, Enos Ayers and others. They also designed and built the open Board of Trade, numerous churches and much work outside of the city. H. B. Wheelock was educated in the University of Michigan, and studied architecture and technology in his father's office, receiving the benefit of his experience and knowledge. Upon the retirement of the latter from the business affairs of life H. B. Wheelock immediately took the helm and his subsequent career has done credit to his early instruction and to his instructor. He has designed the residences of C. E. Morrison, J. B. Knight,

C. H. Nicholls, Rev. Thomas C. Hall, Dr. Frank Cary, Dr. H. W. Hoyt, the Kenwood Evangelical church, St. Mary's Catholic church at Freeport, Ill., the Congregational church of Decatur, apartment buildings for C. E. Morrison, F. Crumbaugh, Mrs. J. Holmes, Vickery Bros., the St. Catherine and Ricardi apartment buildings, a residence and block of buildings for Dr. Franklin H. Martin, Windsor Folding Bed Manufactory for C. H. Hildreth, the Western Coated Paper & Card Company's factory, the Post Graduate Medical college and other buildings too numerous to mention. This list of work speaks for itself, and only confirms the popular report that Mr. Wheelock ranks among the foremost of the young men of his profession.

The profession of an architect is a very difficult one, requiring constant study, and, in addition, a practical training in active service and a thorough scientific and mechanical education, and it does seem a little remarkable, since the architect, equally with the chemist, holds our lives and health in his power, that the one profession should be surrounded with stringent regulations by law, inclusive of a severe examination, and the other by none. The essential requisites for a competent and skillful architect are found in a marked degree in Mr. Frederick Baumann, who has been engaged in the practice of his profession in Chicago for nearly forty years and is the first of German architects in the city. Proofs of his skill are very numerous throughout the western metropolis as embodied in the many splendid buildings he has designed, and which have been erected under his supervision.

Mr. Baumann may be classed with the pioneer architects of the city. Born near Berlin, Prussia, in 1826, he received a liberal education there and graduated from the Institute of Technology and Academy of Fine Arts. In 1851 he left Germany, and the same year he is found filling the position of draughtsman in the office of the pioneer of Chicago architects, J. M. Van Osdel. It was the beginning of a new building era in the city's history. The people tired of crudeness, looked to brighter days, and in a measure turned an atom of their attention away from the trade to art. In February, 1852, the young Prussian draughtsman formed a partnership with a Mr. Burling, which continued until the era of city improvement dawned in 1855, when he became a partner of J. M. Van Osdel. This business association continued during the three following years, Mr. Baumann retiring in 1858 on account of ill health. Forming a partnership with A. Wallburn, as a contracting and building firm, he continued in business until 1865, when his health warranted the resumption of professional work. Three years after he admitted his cousin, Edward Baumann, as partner, and their business association continued until 1879. For the decade ending in 1889 Mr. Baumann directed a large business alone. During the year named J. J. Cady became his partner and the firm name of Baumann & Cady became a household word in building and architectural circles. For the golden period of forty years the name of Frederick Baumann has been associated with progress in architecture and civil engineering as applied hereto. Within the last quarter century he has contributed most valuable papers on historical and technical architecture and early in the eighties gave to the profession that classical brochure on isolated pier foundations. He is the author of a work on the building arts and the originator of a system of incalculable

use to the builders of the city. In 1872-3 his name was associated with half the large office buildings erected; and in our own time of massive commercial architecture, the name is associated with the period—the novel improvements introduced in many new apartment buildings on Michigan avenue, emphasizing the statement that the architect of sixty-five winters need not ask the aid of younger members of the profession. In the history of the upbuilding of Chicago, as well as on the pages devoted to architecture and builders' associations, the name of Mr. Baumann repeatedly occurs. It is a necessity of the record and a natural result of forty years' close connection with the progress of the building arts in the West.

Prominent among the leading and most reliable architects and general contractors in Chicago is the widely known firm of Messrs. John Woollacott & Son, whose offices are located in the Operahouse building. This business was established in 1852 by Mr. John Woollacott, who conducted it until 1870, when he admitted his son, Mr. John S. Woollacott, into partnership. This firm has been identified with the rapid growth and development of Chicago, which have been favorable to the construction of substantial and handsome public and private edifices. Though no recognized style of architecture has been rigidly followed, the advantages and beauties of the Grecian, Roman, Corinthian and Gothic have been adopted and a system has grown up not referable to any particular period, but a combination of many, which may be described as distinctly American.

In reviewing the progress of architectural education in Chicago the names of Bauer & Hill will at once suggest themselves to many of our readers. The firm are recognized as architects and superintendents of the highest repute, and occupy fine offices at 156 Lake street. The business was established in 1857 by Messrs. Carter & Bauer, who were succeeded in 1868 by Messrs. Bauer & Loebnitz. In 1874 Mr. Augustus Bauer became sole proprietor, and in 1880 the present firm was organized by the accession of Mr. Henry W. Hill to partnership. These gentlemen are recognized throughout the entire West as representatives of the highest type of modern architecture, who have successfully solved the complex problem of how best to utilize the minimum of building space with the maximum of architectural accommodations and beauty of design. Proofs of their skill are numerous in this city and elsewhere, as embodied in the many splendid edifices they have erected during the past few years, and which are much admired for their substantial appearance and elegance of design. Among the specimens of their ability to be seen in this city are St. Paul's church, St. Columbridera's church, and some thirty public school buildings erected from their plans and under their superintendence in this city and county. They have also built a large number of business blocks throughout the city, and their services are in constant demand in all parts of the West and Southwest.

William Le Baron Jenney stands at the head of his profession as an architect, and has had a varied and extensive practice, and has contributed materially to the many improvements in architecture and building engineering, culminating in the several elegant and tall buildings that have made Chicago famous. He was born in Fair Haven, Mass., September 25, 1832, and there he was reared and partially educated. During his early manhood

he was educated at Cambridge university, where he studied engineering. In 1853 he went to France to study engineering in the French government engineer's school (L'Ecole Centrale des Arts et Manufactures, Paris), and three years later graduated from that institution, receiving his diploma, class 1856. When the war broke out, in 1861, he entered the army as a civil assistant in the engineer department, and was placed in charge of the fort at Cairo, Ill., and shortly after was commissioned as additional aide-de-camp, with the rank of captain in the United States army, and assigned to the staff of General Grant; later he was brevetted major. He assisted General McPherson at forts Henry and Donaldson, and was staff engineer at Corinth to General Grant. Upon the fall of Memphis he was transferred to the staff of Gen. W. T. Sherman. He built a fort at Memphis, and later was appointed chief engineer of the Fifteenth army corps, and later of the Army of the Tennessee. When General Grant was promoted to the command of the United States army, General Sherman was placed in command of the Western department. Mr. Jenney went with him to Nashville, Tenn., where he was put in charge of the engineer headquarters. He remained in the army until May, 1866, when he resigned; then, after completing some work in the Allegheny mountains, he came to Chicago. In 1876 he was appointed professor of architecture in the University of Michigan at Ann Arbor, his term expiring by legislative limitation. Since his arrival in Chicago he has designed some of the most important structures of this important building epoch, and has introduced several new features of great importance to architects and architecture. For the first time in Chicago, in the construction of the Portland block, brick was used by him in the building of a large and fine office building, against the advice and protest of the property holders in the vicinity. Time has proved the wisdom of his judgment. In the Home Insurance building, which he designed, he introduced the new style of skeleton construction, the metal columns in the piers carrying the walls as well as the floors. This distinctive departure is now known as the Chicago construction. Mr. Jenney designed the Leiter building, the Union League club house, the Manhattan, the first sixteen-story building in Chicago, and the Fair building, the latter being about twelve inches higher than the Auditorium tower, and covering a half block; a steel-riveted fireproof structure throughout, the lower two stories being almost entirely of plate glass; the steel columns being covered with terra cotta, only sufficient to protect them against the heat of a severe fire; the remaining stories being of a special brick of a light warm color with terra cotta trimmings. The work of designing these great structures would alone entitle Mr. Jenney to the highest position in his profession. Mr. Jenney was appointed to the commission of architects to the World's Columbian exposition, with the special assignment as architect of the Horticultural hall, an ornamental building one thousand feet in length, facing the lagoon terrace. In 1891 Mr. Jenney formed a partnership with Mr. William Bryee Mundie, who had for several years held the position of first assistant architect. Mr. Jenney is a member of the Union League club, the University club, the military order of the Loyal Legion, the Society of the Army of the Tennessee, the Grand Army, Post 5, and the American Institute of Architects. He was married, in 1867, in Cleveland, Ohio, to Miss Lizzie H. Cobb of that city. He has two sons—Max Jenney and Dr. Frank L. B. Jenney.

Chicago has proved to be the most important field in the United States for architectural enterprise, and in no sphere of the practice of the profession has more substantial progress been made than in that of the designing and erection of grain elevators and warehouses, wherein Chicago leads the world, both as regards number, capacity and perfection of equipment and arrangement. A former representative of the favorite style of architecture embodied in these vast structures was the well-known firm of Baumann & Lotz, rooms 59, 68 and 70 Metropolitan block, who long held a leading position in America as grain elevator architects and builders. The combination of talent exhibited in this firm would be difficult to find elsewhere. Mr. Edward Baumann was an associate member of the American Society of Civil Engineers, having been closely identified with the architectural profession from an early period of his life. He had for years made the designing of grain elevators a special study, while the improvements which he embodied proved to be one of the most practical and acceptable character, as witness many of the most important elevators, among others, Armour, Dole & Co's., Munger, Wheeler & Co's. and the Chicago, Rock Island & Pacific railroad company's, that form such striking landmarks. On the other hand, Mr. William H. Lotz, now of the firm of Lotz & Kennedy, patent attorneys, is one of the leading mechanical engineers of the country, a member of both the American Society of Civil Engineers and the Western Society of Engineers, with a national reputation for his skill and ability. Mr. Lotz was born in Germany in 1838, and received his education in his native land, and has been actively engaged in the practice of his profession in Chicago since 1865, with which he has combined the other natural branch of the profession, viz., the solicitation of American and foreign patents, having a large practice in patent cases, in which he is an expert. The firm were patentees of some very important inventions of their own, embodying improvements in grain elevators, breweries, malthouses, etc., and were fully prepared with every facility to promptly fill all commissions in their line with that intelligent comprehension of the objects and requirements to which the structure was to be put, which contributed greatly to render them the representative exponents of this branch of the profession.

George O. Garnsey, 117, 185 Dearborn street, is an architect of long practice and varied experience. For over thirty years he has carried on an extensive business from Maine to California, designing and erecting some of the most noted buildings of this country, while his main office has remained in Chicago for many years. He is an enthusiastic student of his profession and a draughtsman and colorist of known ability, which, combined with a thoroughly practical mechanical education, has raised him to the front rank of his profession. For several years he traveled and studied in Europe and the far East with a view of becoming thoroughly conversant with the methods used in building and construction in other countries; hence his many practical writings on the mechanics and other sciences have been widely quoted and read. During his extended professional career he has executed numerous commissions in an eminently satisfactory manner for many of our leading capitalists and builders. He has made the subject of city architecture a special study, and his conceptions of the requirements of modern churches, public institutions, apartment houses, stores, and

private residences are generally recognized as being most satisfactory for all practical purposes. The following are some of the important buildings constructed by Mr. Garnsey: New Alhambra theater, Chicago, cost \$350,000; Illinois State Capitol, Springfield, cost \$5,000,000; the Eastman buildings, Chicago, cost \$700,000; Criterion theater, Chicago, cost \$100,000; St. James hotel, Chicago, cost \$150,000; Grand Operahouse, Chicago, cost \$200,000; Ogle County courthouse, cost \$100,000. He is conducting a general business, and is fully prepared with all necessary facilities to execute or carry out any architectural undertaking not only promptly, but with that intelligent apprehension of design which makes his efforts so highly appreciated. In 1885 Mr. Garnsey became associated with the *National Builder* as its editor-in-chief, since which time he has given to his profession many instructive and interesting articles which have appeared in this journal. His work on roof trusses, timber framing, practical carpentry, perspective and foundations, have had a wide circulation. He is the author of the "American Glossary of Architectural Terms," which until the issue of "Industrial Chicago: The Building Interests," was the only dictionary published in this country adapted to the use of the American architect and builder, the fifth edition of which is now being sold.

Dankmar Adler, of the firm of Adler & Sullivan, architects, was born at Lengsfeld, Germany, in 1844, and in 1854 came with his parents to the United States, first locating in Detroit, Mich. He received his schooling principally in Detroit and Ann Arbor, and in 1858 entered upon the study of architecture in the office of E. Willard Smith, a well-known architect of the former city. Upon coming to Chicago, in 1861, Mr. Adler was employed by Augustus Bauer, now a prominent architect of this city. In 1862 he became a member of Company M, First Illinois light artillery, with which he served through the principal marches and engagements of the Chattanooga and Atlanta campaigns. In all he served three years, the last six months being a member of the Topographical Engineer Corps of the Military Division of the Tennessee. After returning from the war he again entered the office of Mr. Bauer, and afterward that of Architect O. S. Kinney, with whom he remained until Mr. Kinney's death, in 1869. Having become by that time foreman of the office, Mr. Adler, in conjunction with the son of Mr. Kinney, carried on the work of their deceased master under the firm name of Kinney & Adler. The work of this firm consisted chiefly of country churches, schoolhouses and courthouses. In 1871 the firm was dissolved, and Mr. Adler became associated with Mr. Edward Burling. Burling & Adler took a leading part in the work of rebuilding Chicago after the great fire. Among the buildings of note erected by them were the old First National bank, the Tribune building, the Diekey building, the Prairie State and Marine banks, the Methodist Episcopal church block, the Grace Methodist Episcopal and Unity churches, the Sinai Temple, the Wrenn & Meeker, Manierre, Ogden, Greenebaum, Garrett, Ullman, and many other buildings. Later, when Burling & Adler dissolved partnership, Mr. Adler designed and erected Central Music hall as his first independent work. In 1881 the firm of Adler & Sullivan was formed, and as such has since taken an active part in the building up of Chicago. Among the more noteworthy structures designed by them are the

Auditorium, Grand Operahouse, McVieker's theater and the various buildings erected by the late Martin Ryerson and his son Martin A. Ryerson. Of late years Messrs. Adler & Sullivan have also taken charge of important out-of-town work, such as the Carnegie Music hall of New York, of which they were associate architects, the opera house at Pueblo, the Wainwright building at St. Louis, the Hotel Ontario and the Dooley block at Salt Lake City and many other structures.

One of the oldest among the prominent and well-known architects in the city was T. V. Wadskier, a native of Denmark, who was engaged in his profession over thirty years in this city. He designed and erected many of the prominent churches, private residences and handsome stores to be seen on Chicago's principal thoroughfares.

Another well-known architect is William Thomas, 76 Metropolitan block. This gentleman was born about fifty-one years ago in New York, and he is the descendant of a well-known family of architects. His father and his grandfather were both architects, and acquired considerable fame in their profession. Mr. Thomas' whole business life has been spent in the designing and superintending the erection of buildings, and for nearly a third of a century he has been in business in this city on his own account. He came to reside in Chicago in 1857, and is to-day one of the oldest and most experienced members of his profession. He makes a specialty of designing and building private property, and residences, stores, etc., erected from his plans are scattered all over the city and state.

M. E. Bell, architect, has a beautiful suite of office rooms in the Insurance Exchange building, at the corner of La Salle and Adams streets (rooms 921, 922, 923). Mr. Bell was born at Birmingham, Penn., October 20, 1847, and is consequently now just past his forty-third year. His ancestry were all Quakers, and he himself was educated a Quaker at the famous school of that denomination known as Westtown college, Chester county, Penn. His architectural apprenticeship commenced in the fall of 1867, after he had had three years' experience in learning the carpenters' trade, and two years in patternmaking. His tutor was Mr. A. H. Piquenard, a French architect of great experience both in France and the United States, and who, just after the Civil war in the United States, became the architect of the new Illinois State Capitol building, at Springfield, Ill., a building which cost \$4,500,000. It was upon this building that Mr. Bell received the practical experience which so well fitted him for the important works which were subsequently designed and erected by him. During a period of eight years he was constantly engaged upon the construction drawings of this building, and it is well known that upon the death of Mr. Piquenard, the commissioners, Jacob Bunn, James H. Burrage, and the late John T. Stewart, entrusted the entire completion of the work to Mr. Bell. At the time of Mr. Piquenard's death, his work upon the Iowa Capitol building, then only just commenced, was also given to Mr. Bell, solely because of his well-known ability, and without solicitation upon his part. It was at this juncture in his career that Mr. Bell associated with him, in his practice, Mr. William F. Hackney, of Des Moines, Iowa, who had been for several years previously also a student of Mr. Piquenard's, and the firm did an extensive business under the firm name of Bell & Hackney. The princi-

pal works executed by the firm was the Illinois Southern penitentiary, at Chester, Ill., and the successful completion of the Iowa capitol. The first of these buildings cost \$850,000 and the last \$2,850,000. Mr. Bell, however, devoted the most of his energies upon the Iowa capitol, and it is stated that there is scarcely a molding or particle of finish, even to the fresco painting, which was not designed or its execution attended to by him. The original design was entirely remodeled by the new firm of architects, and it is pronounced as it exists to-day, one of the most noble, dignified, and successfully constructed buildings in the United States, and the people of Iowa are never ceasing in their praises and satisfaction with their new capitol building. Other works were at the same time carried on by the firm, such as the Des Moines Grand Operahouse, the remodeling of the Kirkwood hotel, the Harding residence, stores, schools, etc. In 1883 Mr. James G. Hill tendered to the secretary of the treasury his resignation as supervising architect of the government, which was accepted, and it devolved upon the secretary, Hon. Charles J. Folger, of New York, to appoint his successor. In his official correspondence upon this subject, Secretary Folger expressed himself as desirous of obtaining for the position of supervising architect, one whose reputation for honesty and ability would establish the office firmly in the confidence of the public, and having submitted the matter to President Arthur, they together determined to offer the position to Mr. Bell. It is interesting to know that Mr. Bell's efforts to obtain this high office were confined entirely to correspondence in answering questions relating to his private practice and experience, and that his selection finally for the place in November, 1883, was the result solely of his successful private practice and based entirely upon his well-earned reputation, as an architect of unswerving integrity. In speaking of his appointment, Mr. Bell says, "I did not move from my office to obtain it, with but one exception. This was after an associate press dispatch was published that I was 'likely to be appointed supervising architect.' I received a dispatch from Senator Logan, of Illinois, to meet him in Chicago, and I did so and returned immediately to my office in Des Moines, and when I received a dispatch from Secretary Folger to call upon him at Washington to consult upon the question of my appointment, I experienced both feelings of regret and great surprise." After occupying the position for nearly four years, Mr. Bell resigned and immediately came to Chicago to again pursue his private practice, but it was after he had most successfully administered the great work of the office under both President Arthur and President Cleveland's administrations, and produced designs in government buildings in nearly all the states of the union, which are now either constructed or nearing completion. These designs are all refreshingly original and entirely out of the government conventional style which had been so monotonous previous to his work, and of which the people are most thoroughly tired. They involved an expenditure by the government of nearly \$20,000,000, the principal ones are built in the following cities of the Union: Tyler, Tex.; Dallas, Tex.; Greensboro, N. C.; Abingdon, Va.; Waco, Tex.; Erie, Penn.; Pensacola, Fla.; Syracuse, N. Y.; Carson City, Nev.; Jackson, Tenn.; Aberdeen, Miss.; Concord, N. H.; Nebraska City, Neb.; Augusta, Me.; New Albany, Ind.; Oxford, Miss.; Lynchburg, Va.; Marquette, Mich.; Council Bluffs, Iowa; Terra Haute, Ind.;

Harrisburg, Va.; Jefferson City, Mo.; St. Joseph, Mo.; Hannibal, Mo.; Rochester, N. Y.; Poughkeepsie, N. Y.; Lexington, Ky.; Peoria, Ill.; Clarksburg, W. Va.; Fort Wayne, Ind.; Denver, Colo.; Brooklyn, N. Y.; Pittsburgh, Penn.; San Antonio, Tex.; Shreveport, La.; Minneapolis, Minn.; Macon, Ga.; Louisville, Ky.; Jackson, Miss.; Council Bluffs, Iowa; Galveston, Tex.; Montpelier, Vt. Mr. Bell since coming to Chicago has constructed some fine buildings, some of which are the residences of Mr. P. F. Munger, Mr. J. P. Smith, Mrs. Marie Wilke and Mrs. M. R. Hallam; the First National bank building of Bloomington, Ill.; the Tilt-Smith Factory building, and Hon. M. E. Stone's residence and lodge, at Evanston; the Napierville (Illinois) National bank building and Masonic lodge; the Franklin Life building, Springfield, Ill., and is at work upon many others. In July, 1891, he was appointed by Secretary Foster, superintending architect of the United States World's Columbian Exposition building. He is also in charge of the government buildings of the city as the local architect. Mr. Bell is a Republican in politics, stanch and true, and he is a member of the Republican League club. He was married June 7, 1873, to Miss S. A. Van Hoff, of Springfield, Ill., and they have five children.

There are few names better known in connection with the architectural history of Chicago than that of Henry Lord Gay, for several years, until recently, editor and publisher of the *Building Budget*, a journal of architecture and kindred arts, and, previously and since, an architect of acknowledged ability and wide reputation. Mr. Gay was born in Baltimore, Md., September 2, 1844, a son of Charles H. and Lydia (Lord) Gay. His father, a native of Connecticut, the descendant of a Revolutionary soldier, was a manufacturing jeweler during a considerable portion of his active business career. His mother was a descendant of the original Lord family of Connecticut, who have passed into history as among the pioneers of old Saybrooke and one, a graduate of Yale college, was the first pastor of the old city of Norwich, Conn. The youthful period of Mr. Gay's life was passed in New Haven, Conn., where he attended the Dudley grammar school, French's grammar school and Hopkins' grammar school. He began the study of architecture with Sidney M. Stone, a reputable and successful church architect of that city, and remained under his able instruction four years. In 1864 he came to Chicago, having formed a connection with the office of W. W. Boyington, architect. In 1867 he had perfected himself in a knowledge of his profession and gained a familiarity with Chicago and the business men and methods connected with its building interests. It was in the year last mentioned that Mr. Gay began business for himself, alone, as an architect, with an office in the Oriental building, then 122 La Salle street. Among his first patrons was Mr. S. B. Howe, the long famous and now retired circus proprietor, for whom he designed and constructed various residences and block of dwelling houses. His first conspicuous work was the First Congregational church, corner of Ann and Washington streets. His next was the Tabernacle church, which was remodeled and practically built new. In the spring of 1871 he established himself in new quarters in the Bryan block, but was permitted to labor there but a few months when everything he used in his profession was swept away in the great fire. He at once began to look about for means to continue in business. Tele-

graphing to a friend in St. Louis, also an architect, to send him an outfit for work, including drawing paper, instruments, etc., he sought and found an office in a little building which stood at the northwest corner of Halsted and West Madison streets, the great central point of business immediately after the fire. It was on Tuesday, October 10, the same day of the fire, that he telegraphed for the materials, and it was on the following Friday that they arrived, and he put them in place in his circumscribed quarters comprised in a single room not more than 9x12 feet square, all that could be obtained in this suddenly crowded location, but too small to accommodate a detail table and Mr. Gay beside it. After the fire Mr. Gay's first work was the temporary Board of Trade building. It was a simple structure of cedar posts, scantling, boards and paper in the form of an irregular quadrangle, from thirty feet wide at one end to eighty feet wide at the other, and two hundred feet long and twenty-two feet high.

Just prior to the great fire, Mr. Gay had plans prepared for a large bank building at Marquette, Mich., for Peter White, which were destroyed with plans for private residences for Shelton Sturges, at Lake Geneva, and Robert Hill at the corner of Wood and Washington streets, and other improvements of a large character, including plans for college buildings at Marshall, Mich., and at Springfield, Mo. The bank building at Marquette was completed from plans after the fire at a cost of \$70,000; Robert Hill's residence at \$45,000 and the Sturges residence at Lake Geneva for \$30,000. Mr. Gay became actively engaged in the reconstruction of Chicago after the fire, and built numbers of the business blocks of the city, notably the Central block; Farwell's buildings, corner Washington and Market streets; Bent & Goward's building, on Monroe street; Potwin building, on Lake street; a building corner Lake and Clark streets for the Judge Porter estate; a five-story warehouse for the Hartford Life Insurance Company, Baird & Bradley, agents, corner North La Salle and Michigan streets; and St. Mary's block on the corner of Madison street and Wabash avenue, on the original site of St. Mary's church, R. C. Mr. Gay carried out the entire work of building for Bishop Foley, which included the reconstruction of the Plymouth Congregational church (which was bought by Bishop Foley) into the present St. Mary's church. He also designed and built two large school buildings in the parish of St. Patrick's church, as well as remodeled the entire interior of the church; also built the St. Joseph's hospital for the Sisters of Charity, and reconstructed various Catholic churches in the diocese.

The Matteson house was constructed by him, on the corner of Jackson street and Wabash avenue, recently changed to the Wellington hotel. Various private residences and blocks of dwelling houses and minor store buildings have been designed and constructed by Mr. Gay in every division of the city. During the years of 1872 to 1880 inclusive, besides his city clientele, Mr. Gay had many patrons from outside the city. At Jackson, Mich., he designed the residences of E. Webster and Col. Withington, and the Bennett block, built at an aggregate cost of \$400,000. At Kalamazoo, Mich., he designed the Corporation building, the Ladies' Library, the County jail, Bassett and Bates' business block and the Austin residence, at a total cost of \$300,000. At Rockford, Ill., Robertson's and Taleott's office buildings, remodel-

ing of the Second Congregational church, the Winnebago county courthouse and Rockford cemetery chapel, now building, at an aggregate cost of \$300,000. At Decorah, Waterloo, Red Oak, Fort Dodge, Deer Creek, Union Grove, Waverly and other points, including fifteen towns, churches have been erected from Mr. Gay's designs. At Faribault, Minn., two of the college buildings were designed by Mr. Gay for Bishop Whipple's Episcopal college; also a college building at Deer Lodge City, Mont., and a school building for an industrial training school at Fort Wrangle, Alaska, built by the Presbyterian missions with headquarters at Denver, Colo. Besides the churches built in the state of Iowa, churches have been erected from designs by Mr. Gay in the states of Nebraska, Missouri, Illinois and Kansas, numbering a total of thirty-three. During the years above mentioned Mr. Gay has designed and built at Lake Geneva, Wis., the following summer cottages, viz.: Mr. Shelton Sturges, Mr. Julian Rumsey's, Mr. George R. Dunlap's, Captain Wiley, M. Egan's, Mr. Henry Strong's, Gen. Arthur C. Ducat's fishing lodge, Mr. John Johnston's residence, Mr. Samuel W. Allerton's residence, Mr. R. T. Crane's residence, and more recently Mr. E. Norton's residence. The aggregate cost of these improvements amount to \$250,000.

In 1880 Mr. Gay went to Italy and participated in the world's competition in designing the national monument to King Victor Emmanuel. It was too much to expect, perhaps, that an American would take first place with noted Italian artists in the field; but it is worthy of note in more ways than one that Mr. Gay in competition with two hundred and ninety-three competitors received second mention and a silver medal and diploma which were bestowed on him by the Italian government, and he is to-day the only American architect holding a foreign medal. Perhaps Mr. Gay is as well known in Chicago as the originator of the Institute of Building Arts (first known as the Permanent Exhibit of Building Materials and Improvements), the Builders and Traders' Exchange and the Western Association of Architects, as through any other connection, though he stands deservedly high as an active architect and his work is coming largely in demand since he relinquished architectural journalism a short time ago to devote his undivided attention to the practice of his profession. He established the *Building Budget*, an exceptionally able and artistic architectural monthly, in 1885, and conducted it successfully until it was consolidated with the *Northwestern Architect*, in January, 1891, since which time it has been issued simultaneously in Chicago, St. Paul and Minneapolis. The considerations which impelled Mr. Gay to embark in and withdraw from this enterprise are indicated thus in his valedictory published in the last issue of the *Building Budget* in its individual form: "The moment is fitting to recall the reason that ushered the *Building Budget* into existence; the public work which its editor has done; and the present condition as well as the future prospects of that work. To the enterprise now well known as the Institute of Building Arts, the editor gave all his thoughts and hopes, his money and his time for a number of years not contemplated at the beginning. Such was the state of our art at the outset that, rather than aid, he received discouragement. Persisting in services that were wholly public, he soon met private hostility. The literature of architecture in the West was relegated to the basest of private purposes, and the *Building Budget* was regretfully

published, in order that the Institute of Building Arts might have an advocacy which was denied it among supposedly respectable members of our profession. Finally, with the adoption of the editor's idea by the Illinois Chapter of Architects, the Institute of Building Arts has become a wholly public work. Its founder has realized that part of his expectations which he had hoped would come after a year instead of seven years, and the particular reason for the *Building Budget* ceases. Its object has been achieved." Mr. Gay was made a member of the American Institute of Architects in 1875. He was, however, active in organizing the Western Association of Architects and was its first secretary. He was solicited to hold the office a second year, but refused. He was also first secretary of the Illinois State Association of Architects, a branch of the Western association, afterward first vice president, and later was active in aiding the consolidation of these societies with that of the American Institute of Architects, under which title the National associations have been merged.

S. M. Randolph, architect, F. A. I. A. This gentleman has been actively engaged in his profession and has designed many of the pleasing and substantial buildings that go to make up rebuilt Chicago. Mr. Randolph was born in 1837, near New Brunswick, N. J.; being one of the youngest of a large family he received only ordinary advantages of school and academic education, continuing his studies after entering the office of his brother, who was a thorough and accomplished engineer. Mr. Randolph was in the army three years as a member of the famous Chicago Board of Trade battery. The history of that organization is well known, and as he was never off duty for a moment, he is entitled to a part of the name earned for it. At the close of the war this command was a part of the force that went on the "Wilson cavalry raid." Mr. Randolph was then serving as quartermaster sergeant, and as such was in Macon and at the Lanier house when the Fourth Michigan cavalry reported with Jefferson Davis and his family as prisoners. He saw all that was left of the confederacy turned over to General Wilson's headquarters in a most prosaic way, quite destitute of the sensational incidents related by some recent story writers. After the war Mr. Randolph joined his brother in St. Louis, remaining there until 1871, after the great fire, when he returned to Chicago. During the six years Mr. Randolph practiced in St. Louis, the firm of Randolph Brothers received a fair share of patronage. In the division of duties the younger brother made the designs and controlled the draughtingroom, and in that capacity he designed many of the public and private buildings erected in those years in that city and throughout that and other states. He took great interest in public affairs, and in 1870 Governor McClurg appointed him a police commissioner, to fill the term of one he had removed. He was elected president of the board of commissioners, and by Mayor Cole was appointed a member of the board of health. Entering upon these duties under the most trying circumstances, he developed so much wisdom, fairness and firmness, as to silence all opposition and at the end of his term retired amid expressions of regret from all parties.

Mr. Randolph's practice by preference is principally in the line of heavy commercial buildings, although his skill has been shown in many charming designs and his thoroughness manifested in the minute conveniences, thorough ventilation and other requirements of

modern homes and public buildings, among other buildings of his designing may be mentioned, the Second Presbyterian church and the Temple building, of St. Louis; Normal school, Kirksville, Mo.; Soldiers and Sailors' Home, of Quincy, Ill.; Lake View high school, Freeport high school, Blake hall of theological seminary, at Morgan Park; residences of H. C. Durand, at Lake Forest; Edwin Fowler, at St. Louis; Governor Hamilton, at Kenwood; and in the city those of A. L. Sweet, H. H. Kohlsaas, E. M. Phelps, J. C. McMullen, J. H. Dole and W. W. Clark, while some of his designs for commercial buildings may be seen at Nos. 42 to 50 Wabash avenue, Nos. 233 to 241 Jackson street, Nos. 180 and 182 Quincy street, Nos. 222 to 226 Franklin street, Nos. 14 and 16 North Canal street, and Nos. 152 to 158 Lake street. The last a successful piece of remodeling and enlarging of the Marine bank building, built just after the great fire with the then prevailing style of entrances on both streets, approached by long flights of stone steps, the remodeled building is two stories higher and covers twice the area of the old one.

Our American cities are fast becoming adorned with buildings which European countries might well be proud of, and especially is this the case with Chicago, which is showing her sister municipalities what can be accomplished in the way of erecting handsome private residences and imposing public buildings. An architect thoroughly conversant with the growth and wants of Chicago is C. M. Palmer, Honore building. This gentleman was born in Michigan, and began the practice of his profession in Chicago about twenty-five years ago. He has built many notable buildings in the city and its vicinity, among which may be named the Palmer house, Madison house, Honore building, etc. These buildings are greatly admired for their stability and elegance, while the elaboration of detail and care bestowed upon every department of the work reflect the greatest credit on his skill and ability. He is at all times prepared to give estimates, and cheerfully furnishes plans and specifications to meet the views of those intending to build, and can always be implicitly relied on to spare no time or pains to fulfill the expectations of his patrons. Mr. Palmer is fully competent to carry to successful completion all work pertaining to his profession.

Alfred Smith settled in Chicago twenty-three years ago. A native of Toronto, Canada, where he was born in 1841, he went to California in 1861, and made his home in that State for a period of seven years, six years of that time being passed as draughtsman in several prominent offices in San Francisco. In 1868 he visited Chicago. It was a time of extraordinary building projects and of promises of reward to the builders—circumstances which induced him to remain and associate his name with the upbuilding of the old city. Subsequently he shared in the work of rebuilding during the years 1872-8, and by designing well, brought into existence a number of very creditable business and dwelling houses as well as church buildings. A few English Protestant Episcopal churches here were designed by him, and he is at present designing the large architectural building of that denomination at Rockford, Illinois; the A. E. Kent apartment building on Calumet avenue and Forty-third street, costing \$95,000; the \$45,000 residence of John Dowling, on Diversey street and North Park avenue; the \$35,000 residence of George Sherwood, on Ashland

boulevard, and the \$20,000 to \$25,000 residence of John Hubbercamp, on that boulevard, are some of his latest designs. In September, 1890, he designed the A. J. Stone office building, with fronts on Ashland and Ogden avenues and Madison street. Taking advantage of the unusual opportunities presented by three fronts on three leading streets for architectural effect, he gave the city a novel building, correct in form and modern in equipment and arrangement, a clever eight-story study in iron, brick, terra cotta and hollow tile, and one which compares favorably with the great commercial structures in the business center. Mr. Smith is a member of the Northwestern Association of Architects, of the Illinois State Association of Architects, and of the Chicago Chapter of the American Institute. Almost a quarter century of professional labor in this city and the merits of his work here are his best testimonials.

Cass Chapman, architect, has been well known in Chicago since 1868, and among the beautiful buildings of this city, the following were designed by him: the Lakeside building; the Fuller & Fuller building; the Clow building at the corner of Lake and Franklin streets; the Emanuel Baptist church; the Trinity Methodist Episcopal church at Indiana and Twenty-fourth streets; the First Methodist Episcopal church at Evanston; the hall and chapel of Cornell college, at Mt. Vernon, Iowa; the Elkhart county courthouse, the Elkhart county asylum for the poor; the City hall and County building at La Porte, Ind.; the St. George hotel in Evansville; Hotel Vreeland at Michigan City, Ind., and numerous other buildings in Chicago and in different parts of the country which speak highly in his favor as an architect and builder. Mr. Chapman has done extensive work in church architecture, having erected one hundred and eighty different structures between Portland, Ore., and the far East. He is one of the older architects of the city, and his reputation among his brother architects and builders is very high. He was born in Michigan, November 13, 1833, and reared there. He is a son of Dr. Alvin Chapman, who originally came from Vermont. His mother, whose maiden name was Clarissa Sprague, was a woman of more than ordinary attainments, and much of his knowledge of the world of books he derived from her. At the age of fifteen years he was apprenticed by his father to learn the mason's trade and, finishing his knowledge of this business in three years, he began a four years' apprenticeship at the carpenter's trade and soon became his employer's foreman. For twenty years he was a contractor and builder in Michigan and did extensive work in the rebuilding of Niles after the fire at that place. In 1868 he came to Chicago and began devoting himself to architecture, and his natural talents, developed by the best training, have made his name a familiar one to those connected with the building interests. He saw the great fire in this city in 1871, and did his share in the work of reconstruction.

Samuel G. Artingstall is a well-known local engineer, who has been connected with a number of important city improvements. He is about fifty years of age, and is a native of England. He started out as an apprentice to an architect, but pursued his engineering studies at Manchester. He came to Chicago from England in 1869, and from that time until three years ago was connected with the city engineering department. He served as first

assistant city engineer under two administrations and was appointed chief engineer by Mayor Harrison, and served one year in this position under Mayor Roche. Since then he has been engaged as a consulting engineer. He built the La Salle street tunnel, the Lake View waterworks tunnel, and the Fourteenth street waterworks tunnel. He is now superintending the construction of the Van Buren street tunnel for the West Chicago street railway company, and has been called in consultation regarding the tunnel being built under the Detroit river by the Michigan Central railroad company. He has also been called in consultation in regard to public improvements in neighboring cities. In May, 1891, he was appointed chief engineer by the trustees of the Chicago drainage district.

William Strippelman is an experienced architect located at 77 to 79, 159 La Salle street, and was born in the central part of Germany, in which country he was principally educated, finishing by graduating at Berlin and the Marburg universities. Upon the completion of his general schooling he began the study of the art of architecture, and soon after the mastery of that science (in 1862) he sailed for America, landing at New York City. He came west to Cleveland, Ohio, where he entered the Federal army, and soon after his command was sent to Nashville, Tenn., where it was attached to the Army of the Cumberland. Much of his time, while in the service, was spent as a draughtsman for his commanders. After his honorable discharge at the close of the war, he traveled about the country for some time, visiting many points of interest, finally reaching New Orleans in 1866, where he was employed by Colonel Shelia for one year, when he went to Texas and built the Grand Operahouse at Galveston. He also prepared plans for the Houston-Galveston canal, a difficult piece of engineering. In 1869 he came to Chicago, and was employed by the board of public works, to prepare plans for the improvement of the river purchase and for schoolhouses, enginehouses and police stations. In 1872 he established himself independently on the fourth floor of the Builders and Traders Exchange building, where he has since successfully prosecuted his profession. He has done an exceptionally large business in the construction of flats in all portions of the city, but has not confined himself wholly to this branch of building, stores, warehouses, residences and many other classes of buildings having been constructed by him. He is a member of the American Institute of Architects. He was married in St. Louis, in, 1868, to Miss Hermina Schaeffer, by whom he has two sons and two daughters.

The following notice of John C. Cochrane was published in 1887: "Prominent among the leading architects of Chicago is Mr. John C. Cochrane, whose office and draughtingrooms are centrally located at No. 78 Ashland block. Mr. Cochrane was born in New Boston, N. H., and after having received an excellent scientific education, commenced the practice of his profession in Chicago twenty-two years ago. Proofs of Mr. Cochrane's skill and ability are numerous in Illinois, Iowa and the neighboring states, as embodied in the many splendid edifices he has latterly erected, which are much admired by experts for their stability and elegance, while the elaboration of detail and care bestowed upon every department of his work, reflect the utmost credit upon his honorable and business-like methods. The following buildings have been erected according to Mr. Cochrane's plans and under his immediate

supervision, viz.: Illinois state capitol; McLean county courthouse, Illinois; Richland county courthouse, Illinois; Livingston county courthouse, Illinois; Lake county courthouse, Indiana; Porter county courthouse, Indiana; Cass county courthouse, Iowa; Saline county courthouse, Missouri; Will county courthouse, Illinois; Marshall county courthouse, Iowa; Scott county courthouse, Iowa; Carroll county courthouse, Iowa; Iowa state capitol; Cook county hospital, Illinois; Cook county infirmary, Illinois; Chamber of Commerce, Chicago; Michael Reese hospital; Rush Medical college, Medical college of the State university of Iowa, etc. Among the principal churches erected by him are: First Presbyterian, Lake View; Church of Messiah (Unitarian), Central Baptist, and Jefferson Park Presbyterian, all of Chicago; Presbyterian church, Riverside; Baptist church, Lawndale, Ill.; Baptist church, Lena, Ill.; Congregational church, Crown Point, Ind.; Memorial hall, Beloit college, Wisconsin; High school, Beloit; and many others." He first came to Chicago in 1855. In 1856 he removed to Davenport, Iowa, and designed many of the leading buildings there. In 1864 he returned to Chicago, and, after a successful career, died here December 13, 1887.

Ralph E. Brownell, of the firm of Eggleston, Mallett & Brownell, is a practical civil engineer, and there are few in Chicago more expert in laying out property and supervising its drainage, sewerage, paving, macadamizing, etc., and none more skillful in laying out suburban property, he having made a long and careful study of all the details of the development and improvement of city and suburban real estate. He was born in Minnesota in 1857, a son of C. S. and Laura J. (Haviland) Brownell, and came in 1863 with his father, to Chicago, where the latter has since been a successful merchant. He was educated in Chicago, and is a graduate of the high school of Englewood. After leaving school he entered the public-works' department of the town of Lake, in which he served nine years, three years of the time as superintendent of public works. He also filled the office of assistant engineer in the construction of the improvement of Washington park and Michigan boulevard. In 1885 he became a member of the firm of Eggleston, Mallett & Brownell, as above described, and has since had charge of the construction department, giving a large portion of his time, as has been intimated, to the development and improvement of real estate. The improvement of all of the property which has been developed and placed on the market by the firm, has been realized under his careful personal supervision. The career of Mr. Brownell demonstrates what may be accomplished under favorable conditions and with such opportunities as Chicago presents by an active, pushing, energetic and honorable man, far seeing, careful in planning, prompt and unswerving in execution. Mr. Brownell is a prominent Mason, being a Knight Templar and having received the thirty-second degree. He was married in 1878 to Miss Lucy Adams, of Chicago, daughter of Francis T. Adams, and has two daughters named Ora and Ethel.

An old and experienced architect of Chicago is James L. Meriam, 10, 177 La Salle street. Mr. Meriam was born nearly seventy years ago at Worcester, Mass., and for almost fifty years has been a practical architect and carpenter. Thirty-nine of these years he has spent in Illinois, and twenty-nine in Chicago. It is now twenty-eight years since he started business on his own account, and many fine buildings both in the city and in different parts of

Illinois and the northern states, including many schoolhouses, churches, courthouses, etc., and the Washburn & Moen barb-wire works at Quinsigamond village at Worcester, Mass., attest his good taste and proficiency as an architect of the first order. To enumerate the numerous buildings he has designed and superintended the erection of, would occupy much more space than we have here at command, and we select only a few for mention, namely: Phœnix block, Vermont block, Marder, Luce & Co.'s premises, the buildings 146, 148 and 168 Clark street, the five-story building, 54 Lake street; the four-story building for the Snow estate, Marshall Field & Co.'s building, the Appleby building, and numerous buildings along Monroe street. Mr. Meriam has an excellent patronage, a first-class office and a full complement of experienced assistants. He is fully prepared with all the necessary facilities to execute or carry out any architectural undertaking, not only promptly, but with that intelligent apprehension of design which makes his efforts so highly appreciated.

An architect who enjoyed a high reputation was J. H. Carpenter, 156 Washington street, the following notice of whom was published in 1887: "Mr. Carpenter is a native of New York City, and has been actively identified with his profession for the past twenty years, during which time he has given ample evidence of his great skill and finished ability in the many splendid edifices that have been built from his designs. He came to Chicago three years ago, and has found a wide field here for the exercise of his genius. Thomas Brann's building, at the corner of Thirty-first street and South Park avenue, the Bristol hotel, and many other structures are evidences of his skill. He also built the Board of Trade building at St. Paul, Minn. Mr. Carpenter distinguished himself by founding the Architectural Sketch club of this city, and is also widely known as author of 'Hints on buildings,' a very valuable work. He employs skilled draughtsmen, and is always careful to embody in his plans all the owner's suggestions, and gives satisfaction in whatever work his services are employed."

Burnham & Root formed their famous partnership in the spring of 1873, being then mere boys. Their first work of any importance was the Sherman residence, at the corner of Twenty-first street and Prairie avenue. This was but the beginning of a career as architects which finds no parallel in the history of the West. The size and importance of the buildings they have designed, the extreme excellence of their intricate and modern plans, and the originality of their ideas, place them at the height of the profession. They can not be complimented too highly upon their work as draughtsmen and architects. The second building they designed was the Grannis building, now known as the Illinois National bank building. This was followed by the Montauk block on Monroe street, the first ten-story fireproof building erected in Chicago. The erection of this building marks the beginning of the new fireproof school of architecture. Immediately following its erection, they designed the American bank building, the Young Men's Christian Association building, the Midland hotel and the Board of Trade of Kansas City, all fireproof first-class properties. They also drew the plans for the Chronicle building, the Examiner's building and the D. O. Mills building in San Francisco, Cal., structures of the very first importance in size, complex and beautiful designs and permanence. Their artistic work may also be seen in the building for the Society for Savings,

the Hay & Mather and the Otis buildings in Cleveland; the Davidson theater building in Milwaukee, Wis.; the Phenix hotel at Las Vegas, Hot Springs; the Atchison, Topeka & Santa Fe and general office buildings at Topeka; the Hotel St. Louis at Duluth, and many others of the largest railroad depots and office buildings throughout the West. In Chicago, besides those mentioned, they also planned the Rialto building of nine stories, fireproof and 142x172 feet; the Commerce building, eight stories high, fireproof and 50x100 feet; the Phenix building, ten stories high, fireproof and 50x200 feet; the Rookery building, twelve stories high, fireproof and 170x180 feet; Insurance Exchange, ten stories high, fireproof, 65x165 feet; Rand-McNally building, fireproof and 165x150 feet; the Chicago, Burlington & Quincy general office building, six stories high and 180x120 feet; the Calumet club building, six stories high and 120x180 feet; the First regiment armory, 170x160 feet; the Monadnock block, sixteen stories high, fireproof, 67x200 feet; the Chicago hotel building for the Northern hotel company, fourteen stories high, fireproof and 165x100 feet; the Masonic temple, nineteen stories high, fireproof and 113x170 feet; the Woman's Christian Temperance Union building, thirteen stories high, fireproof and 95x190 feet; the Calumet building, nine stories high, fireproof and 78x50 feet; the Stock Yards gateway and buildings, and many others, both of a public and private nature. Mr. Root has recently died, but Mr. Burnham is yet living, aged about forty years, in the active prosecution of his business. The office is one of the most extensive and best equipped in the United States, and has everything necessary to carry on its gigantic business, including a regular engineer corps for construction, a special mechanical engineer and a special sanitary engineer. The unfortunate and lamented death of Mr. Root, of pneumonia, early in the spring of 1891, left a vacancy among architects of the United States which it will be difficult to satisfactorily fill. He was, no doubt, the ablest, and at the same time the most rapid designing architect the present building epoch has produced. In the midst of his life's work, when his services were invaluable to the World's Columbian exposition, he was cut down. He was born in 1850 in Atlanta, Ga., and his full name was John Welborn Root. His father was a native of Vermont who had married a belle of the South and followed mercantile pursuits, becoming one of the richest men of Georgia, but his fortune was later involved in the general ruin of the war period. In 1864 John W. Root was sent by his father, on a blockade runner, to England, to complete his education. He narrowly escaped capture by the Union cruisers. He attended school at Birkenhead, opposite Liverpool, for three years, and successfully passed his examination for Oxford, but instead of entering that famous institution, he returned to the United States and entered the University of the city of New York, from which institution he graduated with distinguished honors as a civil engineer and architect. He came to Chicago in the spring of 1872, and the following year formed a partnership with Mr. Burnham. A more extensive and detailed description of the character of their work will be found elsewhere in this work. They were largely instrumental in founding the new school of fireproof structures now in the height of its success. Their Rookery building is, in some respects, no doubt, the finest office structure ever erected. For lightness, airiness, strength and stability, it has no superior in the United States, and, possi-

bly, not in the world. Its general design is fresh and original, and has been extensively copied by architects in all parts of the Union. Mr. Root was particularly noted for the rapidity of his work, and its extraordinary accuracy under many trying conditions.

S. S. Beman, architect, was born in Brooklyn, N. Y., October 1, 1853; studied architecture eight years under the late Richard Upjohn, of New York, and came West in 1879, to design the town of Pullman. Works designed and executed by Mr. Beman aggregate upward of \$15,000,000. Among the most prominent are the town of Pullman for the Pullman company; the town of Ivorydale for Procter & Gamble; the Pullman building, Chicago, ten stories; the Studebaker building, Chicago, eight stories; the Grand Central railroad station, Chicago, six stories; the Omaha Bee building, Omaha, seven stories; the Pioneer Press building, St. Paul, thirteen stories; Northwestern Insurance building, Milwaukee, seven stories; the Pabst office, Milwaukee, fourteen stories; the Michigan Trust Company's offices, Grand Rapids, Mich., ten stories; the Batavian bank, La Crosse, five stories, besides numerous fine residences, churches, schools, clubhouses and miscellaneous works.

Of all the architects who have cast their lot in the world's fair city, none have been more daring in original and unique designs, combining many excellencies known to both modern and ancient times, than J. N. Emmons. He is an artist by nature, a careful, conscientious draughtsman and a superintendent of construction of no ordinary ability. Mr. Emmons studied his profession in the office of Howard Smith, at Detroit, who predicted for him at the close of his apprenticeship, a successful career as an architect. In May, 1876, Mr. Emmons came to Chicago and within the last four years he has drawn the plans and specifications, and superintended the construction of some of the most noted business blocks and residences at Hyde Park, Woodlawn, Englewood, Kensington, Brookdale, Ravenswood and Oak Park. Among scores of others equally worth mention are the following: For E. E. Ellington, at Woodlawn, a modest but charming residence built in Queen Anne style and costing \$9,000; at Kensington for John C. Traynor, a \$10,000 store, office apartment and masonic hall, with all modern improvements; for P. and A. E. Sherwood, at the intersection of Langley avenue and Thirty-seventh street, a four-story and basement block of buildings costing \$42,000. This block, for solidity, handsome appearance and architectural features, must be considered one of the best of its class. One of the prettiest residences in Chicago was built by him for E. H. Root, at Auburn Park. It is in the Queen Anne style and is so erected as to command a good view of the lake. The Woodlawn club house, now nearing completion, is a monument to the skill and competence of any architect or builder, and is the handiwork of Mr. Emmons. Although an unusually rapid draughtsman Mr. Emmons is also accurate, and it is a poor contractor indeed who cannot work by them. Mr. Emmons is one of those architects, unfortunately none too common, who believe in giving the builder honest work for the money he is called upon to expend. Mr. Emmons has been a competitor in many a contest of architectural skill where a monetary prize went to the successful contestant, but to his credit be it said he has never yet failed to carry off both the prize and the honors. In the remodeling of residences and blocks Mr. Emmons has scarcely a superior, and his specifications that accompany his plans, are usually well drawn and intelligible to all.

Clinton J. Warren, a distinguished architect, is located at 84 and 86 La Salle street, and his plans have been followed in many of the best buildings in Chicago. He is yet a comparatively young man, but already ranks very high among his professional brethren. He came to Chicago from the East in 1879 and entered the office of Burnham & Root, where, for six years, he studied diligently to learn the art of architecture. In 1886, having fitted himself thoroughly for his life's work, he began business on his own account at 115 Dearborn street. Among the buildings which he has designed are the Virginia hotel, a fine artistic ten-story fireproof structure, 100x150 feet, at the corner of Rush and Ohio streets; The Church of our Savior, a beautiful structure on Fullerton avenue; all the stations and the roundhouse of the Burlington & Northern railroad, besides many depots of the Chicago & Rock Island Railroad; a majority of the residences at Morgan Park, many of which exhibit original and tasteful designs, fully abreast with this progressive and æsthetic age; scores of beautiful residences on the south side; a large apartment house at the corner of Rush and Ohio streets, seven stories in height, 100x125 feet; the Metropole hotel, at the corner of Twenty-third street and Michigan avenue, eight stories in height, fireproof, 100x180 feet; the Aldrich hotel, at the corner of Forty-seventh street and Lake avenue, eight stories high and fireproof; Fairbanks' hotel, at the corner of Twenty-first street and Michigan avenue, ten stories high, 73x190 feet, besides many other buildings fully as large, and built according to models of the latest schools, including one of the finest office buildings in the city, the Unity, sixteen stories, 80x120 feet, absolutely fireproof, finished in marble and mosaics. These are only a few of the many buildings he has designed. A large number of structures of the older schools have been remodeled by him after modern designs. Mr. Warren has been in business for himself for four years and the large amount of work he has turned out and its general excellence attest to his genius. He was born in 1860 and therefore has the best part of his life yet to live. Unquestionably the future will place him high on the list of Chicago's architects.

Edbrooke & Burnham, architects, 1310 Chamber of Commerce building. Franklin Pierce Burnham, of the firm of Edbrooke & Burnham, was born at Rockford, Ill., October 30, 1853, and came to Chicago with his parents in 1860, and has resided here since that date. His father was a builder, and carried on work in this city until 1870. In 1879 Mr. Burnham entered into partnership with W. J. Edbrooke, a prominent architect of Chicago, and has since acted in the capacity of designer of the work of the firm, until the appointment of Mr. Edbrooke as supervising architect of the treasury, when he assumed the general management of the firm's business. Mr. Burnham is strictly a self-made man, having picked up his architectural education in various offices in this city. His literary education was obtained principally in the old Mosely school, at the corner of Twenty-fourth street and Michigan avenue. At the age of fourteen years he began the study of architecture with J. H. Barrows, in the old Lombard block, and at the age of eighteen, with only four years' experience in the profession, commanded a salary of \$3 per day, which at that time was considered large for one of his years, which is an indication of the rapidity of his advance-

ment. Among the many buildings constructed under the supervision of Edbrooke & Burnham, are the Georgia State capitol; the Young Men's Christian association building at Atlanta; the Tabor Grand Opera house, Denver, Colo.; Calvary Baptist church, and residence of William A. Wilson, Kansas City, Mo.; the opera house at Dubuque, Iowa; the Kane county, Ill., courthouse; the Mecca apartment building, Thirty-fourth and State streets, Chicago; the residences of Col. A. H. Sellers, H. G. Chase and E. C. Allen, Chicago; the railroad station and the residences of Joseph Sears and W. H. H. Sears, at Kenilworth, Ill.; the residence of John B. Kirk at Evanston; and residence of James Alexander Kirk, at Kirkwood, Wis.; the entire buildings of the Notre Dame (Indiana) college, and numerous churches in this city, Evanston, Englewood, Wheaton, etc. Mr. Burnham was married to Miss Adelia Milliken, sister of Mrs. C. P. Libby, in 1877. They have two children and reside in the beautiful suburb of Kenilworth.

Walter J. B. Hunter, architect and builder, 1224 West Harrison street, was born in London, England, in 1846. At the age of seven years he came to America with his parents, Walter F. and Caroline E. (Boggs) Hunter. They made the voyage on the Wisconsin, and were seven weeks en route. Landing at New York, they went thence to Providence, R. I., where they lived two years. They next took up their residence in Brewer, Me.

Mr. Hunter's father is a master rigger of vessels, but is now living, retired from active work at his trade, at Brewer. The subject of this notice was the only child of his parents. He attended school a short time at Brewer, Me., and is otherwise practically self-taught. He served an apprenticeship at his trade at Bangor, Me., and was taught drawing and many of the principles of architecture by his father, with whom as a lad he was kept busy at rigging vessels, passing the ball of twine from rig to rig and otherwise assisting in the work. He was for some years employed in shipyards and in sealing ships, and at the age of eighteen years left the home roof and launched out for himself. He was busy at his work in October, 1871, when intelligence reached him of the great fire then raging in Chicago, and he at once abandoned his labors and started for this city, where, immediately upon his arrival, he found work as a journeyman at his trade. In 1875, with a partner, he began business on his own account, with office at J. K. Russell's mill. In 1888 he built a handsome residence at 1224 West Harrison street, where he has since had his business headquarters. He has contracted for and built many business buildings and residences, some of which deserve especial mention: The Nixon, two blocks of flats (one of twenty-eight, the other of sixteen); four stores and flats on Ashland avenue; an addition to the residence of Ex-Mayor Harrison, 85 Aberdeen street; a three-story and two four-story-flat buildings, on Plum and Spruce streets; a block of twenty-eight flats on North Western avenue and Ohio street; a block of flats and a store on Western avenue; a block of three stores with flats above at Morton Park; a cottage with stone and brick foundations at Oak Grove; a frame cottage at Lake View; a cottage at 1171 Congress street; a large shop building; a block of twenty-eight flats on Flournoy street for Carter Harrison. Mr. Hunter's operations are not confined to wood construction, as he does much brick and stone work. His knowledge of architecture is very

useful to him, as he is enabled to do all of his own draughting. He was married, December 13, 1866, to Lizzie S. Bartram, of Brewer, Me., and they have six children.

In these inventive days so great has become the diversity of business pursuits that distinct specialties have arisen in the older industrial lines. The term architect has thus come to signify more than an indivisible business pursuit, and has differentiated into various distinct and clear-cut branches, among which is the important one of modern church designing and construction. This branch alone is a great study, and in a comparatively short time just passed, has developed many important features, among which is the union of the principles of distinct architectural schools presenting a combination of effects, unique, artistic and highly satisfactory to the taste. No special architect in the city has shown greater adventurous gifts in fresh artistic features than John T. Long. Having spent many years in fitting himself for the architectural pursuit, John T. Long stands among the leaders of church and school architecture in this city. Many of his buildings display superb designs in minor as well as major details, a beautiful combination of effects, so new and striking as to kindle the keenest appreciation even in the minds of novices. The great range or resource of design displayed by Mr. Long is as unexpected as it is gratifying to the artistic taste. It will be difficult for any architect of special building in this city to exhibit a greater degree of general excellence in his line than is shown in the following buildings designed by Mr. Long: Normal Park Presbyterian church, Hemenway Methodist Episcopal church of South Evanston, First Presbyterian church of Englewood, Normal Park Baptist church, Covenant Baptist church of Englewood, Forty-first Street Presbyterian church, Fifth Presbyterian church of Chicago, Central Park Presbyterian church of Chicago, and others. But the comprehension of church architecture was not alone sufficient to tire the energies of Mr. Long. He has also grasped the intricacies of modern school and clubhouse architecture, having designed among others the Sherwood school, at Fifty-seventh and Atlantic streets; the Shurtliff school, at Seventy-first and Yale; the Harvard club building, at Sixty-third and Harvard; the beautiful gymnasium for Mt. Union college, Alliance, Ohio; a large number of buildings for the Chicago, Rock Island & Pacific railway on its western extension; the general office building and passenger station at Topeka, and the passenger station at Wichita, Kas., being among them, and many residences and other buildings in this city. The permanency and excellence of his designs evince a thorough training.

Among the leading architects and builders of Chicago a few years ago was George S. Spohr. This gentleman began business here in 1876, and in 1883 had attained a marked prominence in his profession, having designed and carried to completion a large number of fine public buildings, business structures and private residences. The following notice of him was published in the year mentioned: "He has achieved great success in combining exterior elegance with the equally important details of the interior, and embodying in his plans at the same time all the suggestions and requirements of the owner. Among the structures that are monuments of his talent are the Library building at La Crosse, Wis., which cost \$40,000; Fort George Island (Fla.) hotel, erected at a cost of \$250,000; Catholic church for

Father Choka, Eighteenth street and Allport avenue, in Chicago, cost \$50,000; also Catholic church at Aurora, Ill., for Father Schnuckel, cost \$45,000; George Mackintosh's residence at Bloomington, Ill.; George C. Works' residence in this city; Sandbury block on Division street; two blocks of houses for Edward Harland, of this city; the W. W. Brush block of six houses, and numerous others, all of which have elicited the warmest commendation from all who have inspected them. He has held the position of architect to the board of education. He employs five experienced assistants, and is prompt, systematic and reliable in meeting all his engagements."

Much of the prosperity and beauty of a city depends upon its architects, and those of Chicago have much to look back upon with pride. One of the leading men in the profession is Mr. George Beaumont, with office located at 115 Dearborn street. This gentleman has been in the profession twenty-two years, and spent much of the earlier part of his time on the continent of Europe, studying in nearly every city of importance there. In 1879 he received the medal of the Leeds and Yorkshire architectural society for the best class of drawings. He has been connected for eleven years with the building interests of this city. For a time he was superintendent for the well-known firm of Wheelock & Clay, some years out of existence. He is prepared to execute plans and designs for any class of work required, and is with his assistants kept busy executing orders in this line. Previous to 1887 he had superintended the building of some of the largest and handsomest residences in the city, the cost of which has in some instances reached over \$200,000. His later work is well known. Mr. Beaumont has achieved much success, and has been recognized for his talent both here and abroad, being a member of the Royal Institute of British Architects, London, and having been first vice president of the Chicago architectural sketch club, and he has been otherwise prominent in connection with local institutions and affairs.

Ostling Brothers (L. & E. J. Ostling), architects, 159 and 161 La Salle street, room 88, have gained an enviable reputation by the originality and artistic quality of their work, which includes the following among many other structures: store and flat buildings, northwest corner of Wells and Hill streets; same at southwest corner of Hobbie and Townsend streets; same at northeast corner of Oak and Townsend streets; same at northwest corner of Elm and Larrabee streets; same at northeast corner of Rockwell and Laughton streets; same at southeast corner of Wells and Schiller streets; same at southeast corner of Ellis avenue and Forty-second street; same at northeast corner of Lake avenue and Orchard street, and 108 and from 114 to 120 Oak street. Churches: Lutheran church, corner of Seminary avenue and Noble street; Baptist church, corner Elm street and Milton avenue, and Mission, 107 and 109 Oak street. Factories: six-story at 51 to 55 West Pearson street. Residences: nine at corner of Oakdale and Evanston avenue; seven on Sidney court near Diversey avenue; one at 2626 Prairie avenue; one on Washington boulevard near Lincoln street; five on Evanston avenue near Wellington street; four on Hampden court near Wrightwood avenue, and many others.

In the city of Chicago the profession of an architect has been one of the first importance,

and to become proficient in this calling requires years of study, practical experience in active service, and thorough mechanical training, as well as much assiduous study and labor. Mr. Pott possesses these requisites in a marked degree, and, as he has from his sixteenth year applied himself to the study of architecture, he has become eminent, as the many evidences of his skill seen throughout the city abundantly testify. He was born in Borstel, near Oldesloe, Germany, August 5, 1822, to Christian Pott, an artisan, and was educated in the schools of Copenhagen, graduating from the Academy of Fine Arts of that city in 1847. He then began following the calling of an architect in different cities of Europe—Copenhagen and Runders, Denmark, and Altona and Hamburg, Germany. Owing to his high standing in college he became exempt from military service, and devoted himself to his calling. In 1871 he set sail for America, and a short time prior to the great fire landed in Chicago, where the property that he had accumulated was consumed. Nothing daunted by his misfortunes, he still made this city his home, and upon the rebuilding of the burnt district, he was busily employed, his knowledge of his calling standing him in good stead. He has been the architect of the following buildings: Socialistic Turner hall, at Lake View; Koenig's building, on Chicago avenue; the Kulp building, on West Chicago avenue; Guetzlow's building, on West Chicago avenue; the Lutheran church, of Cullman, Ala.; the Bretschneider building, on Ogden avenue, besides many of the finest residences in the city. He has earned a wide reputation for the skill and ability which he displays in his work, for his buildings are beautiful and admirably planned. He was married in Copenhagen, to Miss Anna Schutte, daughter of Frederick Schutte, and by her became the father of a son and a daughter. Emil, a college graduate, and a photographer by occupation, and Bertha, wife of Adolf Oberst, of New York City.

Stephen A. Jennings is one of the ablest architects of Evanston, and is a native of Chicago, born in 1857. His father, George W. Jennings, was an early business man of this city, having come here about 1835, and was for many years associated in the lumber and manufacturing business with Mr. Goodwillie, the firm being Jennings & Goodwillie, and was extensively engaged in contracting and building, erecting the North Market building, which was destroyed in the great fire of 1871, also many other noted structures. He has for a number of years been a resident of Florida. Stephen A. Jennings spent his boyhood days in the city of his birth, and can well recall the time when it lacked much of its present greatness. He was educated in the public schools, and in his early youth worked with his father at the lumber business, but at an early day decided upon architecture as his profession, and with this end in view, at the age of sixteen years, he entered the University of Illinois, and there took a thorough course in civil engineering and technology, graduating from that institution at the completion of his course. Immediately upon leaving school, he became assistant civil engineer for the Detroit & Bay City railroad company, and conducted the survey of the preliminary line of that road through the state of Michigan. He soon accepted a position as superintendent of construction at Springfield, Ill., but soon after, on account of ill health, he spent some time in the West, finally locating at Bismarck, Dak., where he opened

an office and remained two years, during which time he furnished plans for many public, private and business blocks. His first work in Dakota was as superintendent of construction of the State Capitol building at Bismarck. In 1886 he came to Chicago, and then opened his office in Evanston, in which place he has planned the following buildings: The Mann building; the St. Mary's Catholic church, the largest church edifice in Evanston; the C. G. Breed building; three-story dormitory building for the Northwest university; the Northrup block, and among the residences, a large double structure for Dr. R. M. Hatfield; a fine residence for W. B. Park; one for T. Dwight, Jr.; a large residence at Glencoe, for Mrs. E. W. Dupee; a beautiful residence in Summerdale, for W. J. McGarrigle, besides many other handsome structures. Besides his extensive work here, he has done much outside work, including residences at St. Paul, Minn., a large hotel at Wellston, Ohio, and a beautiful residence on the banks of the Potomac, near Washington, D. C. Mr. Jennings is a member of the Masonic fraternity, and resides at Evanston.

Some fine residences and other important structures were designed by P. W. Ruehl, who was born in Canada thirty-seven years ago, and graduated from the Polytechnic school at Karlsruhe, Germany. After being at this school for four years, he made an extensive journey through Europe, and in 1876 came to Chicago and started business at No. 565 South Canal street, and afterward removed to the corner of Twelfth and Halsted streets. Here he had a finely-equipped office, and was accorded a very substantial and influential patronage. Among the local buildings designed by him and built under his supervision may be mentioned Schmidt & Gladers' brewery, F. Wenter's factory building, M. C. McDonnell's private residence, J. C. Calder's block, J. R. Winterbotham's factory buildings, J. A. Stephen's block of stores, T. C. Diener's residence, a block of residences for P. Shoenhofen, etc.

Charles S. Frost is one of the most active and successful of the architects of the world's fair city. He has been in business here since 1880, and since 1886 has officiated in the responsible position of architect for the Chicago & Northwestern railroad. He furnished the plans for the magnificent passenger station at Milwaukee, Wis., which structure is regarded by competent judges as the most elegant, complete and convenient railway station building in the entire West or Northwest. It is Romanesque in style, and is built of red pressed brick with terra cotta trimmings. The architectural design and general appearance of the building on the outside attracts universal attention, for the style seems to be one exclusively its own, not being modeled after any modern design, and its external as well as internal beauty and finish, its solidity and general appearance of durability are admired by all beholders. Every nook and corner of the structure is made use of, and all waitingrooms, diningrooms, etc., are conveniently and pleasantly located, making a most elegant and comfortable station. The floors throughout the depot are of the celebrated Bach French tiling, which is guaranteed to be impervious to any absorption, while the woodwork is all natural oak. The total area covered by the buildings and shedding is four hundred and sixty feet along the lake front and two hundred and thirty-three feet

on Wisconsin street, making a total of one hundred and seven thousand one hundred and eighty square feet, or a little less than two and a half acres. Since 1888 Mr. Frost has followed his profession alone, at that time dissolving his partnership with Mr. Cobb and completing the unfinished work of the firm. He designed the custodial building for the Illinois asylum for feeble-minded children at Lincoln, Ill., the plans of which possessed some admirable features for economy, light and ventilation. He also designed the office building and laboratory for the Illinois Steel Company, the latter the most completely equipped building of its kind in the country; the large eight-story fireproof building at the corner of Madison street and Michigan avenue, erected for the Western Bank Note Company, besides the following residences, constructed under the style of the Romanesque and Italian Renaissance, showing unexpected, surprising yet most beautiful and artistic sentiment and skill; that of R. T. Crane, G. B. Shaw, on Michigan avenue, and N. W. Harris, on Drexel boulevard. He also prepared the plans for the University school building on Dearborn avenue on the north side, the largest institution of the kind in the Northwest, and has designed many railroad stations along the route of the Chicago & Northwestern railroad, ranging in value from \$5,000 to \$18,000. His work in this class of buildings has been very extensive, and reflects much credit upon his reputation. Mr. Frost was born at Lewiston, Me., May 31, 1856, and after having received an excellent education in the public schools, he entered an architect's office in Lewiston, where he remained three years, gaining a good practical knowledge of his present profession. He then went to Boston and entered the Institute of Technology, and after finishing a special course of study in that institution, he was employed in several offices in that city for three years. He then engaged in business for himself and met with remarkable success. In 1880 he came to Chicago, which city has since been his home. He was married here, January 7, 1885, to Miss Mary Hughitt, a daughter of Marvin Hughitt, president of the Chicago & Northwestern railway. Charles S. Frost is a son of Albert E. and Eunice Frost, the former of whom was an extensive lumberman and millman of Maine. He is a Mason and a member of the American Institute of Architects.

Frank B. Abbott was born in Henry county, Ohio, August 4, 1856. His father, Darius Abbott, was a native of Wayne county, N. Y. His mother was born in Ohio. In 1857 his parents removed to Allegan county, Mich., where they have since resided. Mr. Abbott was educated in the public schools of Allegan and Kalamazoo, after which, in 1887, he took up the study of architecture, and in 1881 opened an office in Grand Rapids, Mich. He inherited his taste for the profession, as his grandfather was a draughtsman and inventor, and his father was engaged many years in the building business.

In 1885 Abbott came to Chicago, and became a member of the firm of York & Abbott. Mr. A. J. York was an old Chicago architect who died about four years ago. He was one of the designers of the Palmer house and other notable buildings here. In the spring of 1886 Mr. Abbott withdrew from his partnership with Mr. York, and opened an office in the Home Insurance building. He subsequently had another office on La Salle street, until, in

the spring of 1888, he removed to the Temple Court building, where he occupies offices in rooms 806 and 807. His work has been largely the designing of fine residences, the best example of his work in this line being the one just completed for Mr. C. C. Heisen, on the lake shore drive, between the residences of Robert T. Lincoln and Prof. David Swing.

This is a structure semi-Romanesque in style, built of red granite from the Amberg quarries, and is a marked departure from the mediocrity existing in the style of the more costly residences of Chicago. It has a Spanish tile roof, mosaic floors, hot-water heat and every modern convenience. A reproduction of this house will be found in this work. Mr. Abbott's largest business structure was a seven-story office building on Dearborn street, between Van Buren and Harrison streets, known as the Taylor building.

Mr. Abbott is a natural and original designer, and since locating in Chicago has had built after his plans upward of one hundred residences, besides stores and apartment buildings. During his career here he has gained an enviable reputation, and has the confidence alike of owners and builders. In June, 1891, he was elected a member of the Illinois Chapter of the American Institute of Architects.

Among the most distinguished architects of Chicago is Henry Ives Cobb, gifted by nature with a strong and active mind, a vivid imagination and a fertile genius, and having thoroughly fitted himself by education and experience for extraordinary work in his profession, he had duly reached the summit of the architectural profession. He was educated as a civil engineer, a mechanical engineer and an architect, and his varied experience and unusual energy have made him a name second to that of no other architect in this city or the West. He graduated from Harvard college in the scientific department, and the Institute of Technicology, and having completed his studies there, went abroad and spent some time in the principal cities of Europe, perfecting his education, broadening his ideas of architectural beauties and excellence, and stimulating his already active imagination and intellect. When he returned to the United States he was in splendid condition for a life of the greatest usefulness in his profession. He came to Chicago in 1881, and at once took a stand among the architects of this city. He was peculiarly distinguished for the wonderful fertility, variety and general excellence of his architectural designs, and was more than abreast of the times, being in a large degree the leader of the architectural schools of the present day. As might be expected he shows great originality and a surprising method of combining new and fresh ideas of architectural plans. It is only necessary for the student of art to examine the work of Mr. Cobb to discover wherein his power and popularity lie. Had he done no other work than to create or design the plans for the famous Newberry library, that alone would have stamped him as an architect of genius. It is considered among architects as a masterpiece, and reflects on Mr. Cobb the highest renown. An elaborate description of the structures will be found elsewhere in this work.

Mr. Cobb is a native of Brookline, Mass., and after having secured his education and having returned from Europe, he accepted a position in the office of one of the leading architects of Boston and from the start showed evidences of unusual talent. In 1881 he came

to Chicago to superintend the erection of the Union club house, the plans of which he had prepared, and the success of this achievement first brought him conspicuously to the notice of architects and builders here. He determined to locate here and accordingly opened an office. For a few years Charles S. Frost was associated with him in charge of the construction of the buildings, but except for that time has had no partners. His office is on the tenth floor of the Owings building. Mr. Cobb prepared the plans for the beautiful and palatial residences of Potter Palmer, J. G. McWilliams, Clem Studebaker and many others of the finest homes of Chicago, and also designed the Chicago Opera house, the Owings building, and the Fisheries department building of the World's Columbian exposition. Others worthy of mention are: Watkin's bank, Lawrence, Kas.; a building for the South San Francisco Company, Donald Fletcher's residence, Denver, Colo.; the Union depot, Leavenworth, Kas.; P. E. Iler's residence, Omaha; the Knoxville hotel, Knoxville, Tenn.; Asheville Park hotel, Asheville, Tenn.; the Blackstone Memorial buildings, Branford, Conn.; the Bishop hospital and several residences, at Pittsfield, Mass.; a number of residences near Boston; the Lake Front University buildings; Northwestern University buildings; the Chicago University buildings; St. Charles Roman Catholic institute; Church of the Atonement, Edgewater, Ill.; First Presbyterian church, lake front; the Cook County Abstract & Trust Company's building, and the club house of the Chicago Athletic association. Mr. Cobb was married in 1882 to Miss Emma M. Smith, daughter of the late Augustus F. Smith, a prominent lawyer of New York, and they have six children.

An architect possessing rare skill and ability, who devotes himself principally to the designing and erection of residences and pays particular attention to churches and other large structures both public and private, is Wesley A. Arnold, M. A., 912, 218 La Salle street, a well-known, popular and prominent gentleman, who has, during the past eight years, won an enviable reputation as being thoroughly practically proficient in his profession. He has pursued a successful, prosperous career, each year adding to the volume of his business. He is a thoroughly qualified architect, and during the time he has been in Chicago has executed some very important commissions in the line of his business. He furnishes plans and specifications and estimates for buildings of all kinds, including churches, etc., and has designed and superintended the construction of many dwellings and business blocks to be seen on our thoroughfares. Mr. Arnold, who was born in California, was educated and graduated at a well-known college at Syracuse, N. Y.

The fame of Frederick E. Faber, as an able and experienced architect, has become so universally known that it is only necessary to mention a few of the most important buildings erected by him, to testify to his skill and knowledge of his calling: A block of five elegant residences on Columbia street; the Dusek theater building on Eighteenth and Allport streets; a part of the work on the County hospital and infirmary; the fine residence of Mr. Morse on Dearborn avenue near Lincoln park; many flat and apartment buildings in various parts of the city. Besides much suburban work, the handsome residence of John Alles, Jr., at Winnetka, Ill., was planned by him. It is a frame residence, built in the old English

style, finished in oak and mahogany, and is fitted up with hot and cold water, electric bells and a private gasoline plant. Mr. Faber is considered a thorough master of his calling, for many years of his life have been devoted to the planning of buildings, during which time he has thoroughly familiarized himself with ancient, as well as modern styles and designs in architecture, and being of a decidedly practical turn of mind, has made the knowledge thus gained of material benefit to him. He was born in Copenhagen, Denmark, April 28, 1852, to Hans P. Faber, a noted architect, and was educated in the institute of the Royal academy of his native city, which institution he entered at the age of fourteen years, and where he gave much of his time to sculpture, painting and the fine arts. Later he began the study of architecture and civil engineering, graduating at the age of twenty years, after which he entered the employ of the Danish government as assistant engineer on the breakwaters, which position he filled with credit for two years. He was then employed by the architect as superintendent, and did some commendable work on the first church in Bornholm and the sugar factory on the island of Lolland. He furnished drawings, superintended the details and built the Lolland & Falster railroad with all its stations, etc. Following this he determined to still further perfect himself in his work, and to this end spent one and a half years studying in Germany, Italy and France. In 1879 he determined to make America the field of his future labors, but did not take up his abode in Chicago until 1880, since which time he has been one of the foremost architects of the city. He was married here in 1884 to Miss Huldah Collins, a native of Denmark, and by her is the father of a son, Guy. Mr. Faber is a member of the Foresters and the West Side social club. The firm of Faber & Pagels was established in September, 1888, and has continued amicably and successfully up to the present time. Its offices are at rooms 713 and 714, 84 and 86 La Salle street.

Chicago has proven a fruitful field for the exercise of the highest order of talent in the line of modern architecture, and on every hand are evidences of the skill, talent and energy that have reared such permanent monuments of constructive effort. In reviewing the progress of architectural education in our midst, the name of Mr. Julius H. Huber suggests itself. Mr. Huber was born in Newark, N. J., in 1852, and came to Chicago in 1873. He underwent a thorough preliminary study at the Munich Polytechnic, and ten years ago established his present business. At the present day he is recognized as a thoroughly representative member of the distinctive American school of architecture, and has solved, and still is successfully solving, the complex problem of how best to utilize the minimum of building area with the maximum of accommodation and architectural beauty and design. Proofs of his skill are embodied in the many splendid edifices he has erected in this city and its suburbs, which are much admired by experts for their stability and elegance. Mr. Huber employs skilled assistants, and makes a specialty of designing and superintending the erection of coal sheds, docks, and coal-handling machinery, in which department he has met with signal success. He has performed satisfactory work in this line for the following and other houses: J. S. Hathaway; Robert Law, Lehigh Valley Coal Company; Pratt, Parker & Co., and O. S. Richardson; also for firms in Milwaukee, Pennsylvania and Sandusky, Ohio. He

is greatly respected by the community for his ability and probity, and, being thoroughly conversant with the wants and growth of Chicago, is fully competent to carry to successful completion all work pertaining to his profession. His office is at 170 Washington street.

J. E. Scheller, architect, has commodious offices in the Real Estate building, 59 Dearborn street, rooms 11 and 12, and a branch office at Green Bay, Wis. He was born in 1868 at Green Bay, Brown county, Wis. In 1882 he entered the office of James McDonnell, architect of Chicago, where he was employed for one year. The following year he was superintending architect for the Ontonagon county courthouse in Michigan. The fall of the same year he entered college at Green Bay, Wis., graduating the following year. He then went to Pittsburgh, Penn., obtaining employment in the office of Joseph Stillburg, one of the leading architects of that city. Here he remained for two years, when he was engaged by Kelly & Jones, steam heating engineers. In 1888 he came to the great metropolis of the West—Chicago—entering the office of Treat & Foltz, prominent architects of this city. After becoming acquainted with the city he readily saw the advantages to be gained by engaging in business for himself, and opened an office in the Haymarket Theater building, at which place he did so successful a business as an architect, and his patronage increased so rapidly, that he was obliged to look for more commodious quarters. Among the many prominent buildings of which Mr. Scheller has been the architect are the four-story building, 22x180 feet, belonging to George Reichhold; the Marble Hall pavilion on the west side; five two-story stone houses for Jacob Kramer; twelve two-story buildings for Conrad Kahler; a summer residence for Mrs. T. W. Brophy, at Fox Lake, Ill.; an office building, 66x100 feet, for Jules Parmentier, at Green Bay, Wis.; a four-story solid granite block, 88x100 feet, for Joannes Bros., at Green Bay, Wis.; the Joliet Opera House block, at Joliet, Ill., and many others. He is also the architect for the Madison Hall and Theater building on West Madison street, the second best office building on the west side.

J. L. Silsbee has been a resident of Chicago since 1882, and has shown himself to be a competent architect and artist. He has designed some of the finest buildings in the city, in which the use of wrought-iron columns, beams, etc., were first employed. He planned the fine building known as the Telephone Exchange, which was the first building of notable size in which iron columns for interior use and decoration were employed. He also planned the University Club building, a most creditable piece of artistic work. The fine farmhouse and conservatory at Lincoln park, a structure of great beauty and superior finish constructed largely of iron and glass, in conjunction with stone, was the result of his study. He furnished plans for the interior of the palatial residence of Potter Palmer and for the residence of George W. Hale on Dearborn avenue. His beautiful designs may also be seen in some forty residences and in other buildings in different portions of the city, among which are the residences of Judge Jamison, of Arthur Orr at Evanston, the McNally block on Work street, and many others besides, a large amount of work being done outside of the city limits. The design of these structures

evinces a high degree of artistic sense and appreciation of the useful, conjoined to the beautiful. Many of the structures show superior genius in their designs, and all are a credit to the culture, intelligence and æsthetic taste of Mr. Silsbee. He was born at Salem, Mass., in 1848, in which city he spent his youth and where he was educated at the Phillips' Extra academy. His father was Rev. William Silsbee, a Unitarian clergyman of more than ordinary prominence. J. L. Silsbee, upon reaching the age of sixteen years, entered upon a course at Harvard university, from which institution he graduated with distinction in 1869. Immediately thereafter, he entered the Boston Technological school and took a full course in architecture, at the conclusion of which he went to Europe and spent two years in the principal cities, perfecting his already fine education in the fine arts of architecture. In 1872, upon his return from abroad, he established himself at Syracuse, N. Y., where he entered actively upon the prosecution of his profession, and many of the most beautiful structures of that city are the result of his study and brilliant designs. The Syracuse Savings bank, several large and magnificent church structures, many beautiful residences and the White memorial building, the latter structure showing unusual artistic feeling, were designed by him. He came to Chicago in 1883, and from the first took a high position among the best class of architects. Unquestionably his ability, genius, fine education in his profession and his varied and extensive experience qualify him for doing the highest class of artistic work. He is a member of the American Institute of Architects.

Prominent among those architects who have made a special study of this ennobling art is Mr. Swen Linderoth, of S. Linderoth & Co., 66, 143 La Salle street. This gentleman is about thirty-one years of age and was born in Sweden, where he was educated for his profession. For two years he was in business on his own account in Stockholm, and on November 21, 1884, arrived in Chicago. In the early part of 1885 he opened his office here, and has proved to the public that he is a thoroughly qualified architect. He has executed some of the most important commissions in his profession, not only in Chicago and its vicinity, but in other states, designing and superintending the construction of many prominent buildings. Many of the edifices erected by him are much admired for their beauty, while the elaboration of detail and care bestowed on every department of his work reflect the utmost credit upon the ability and skill of Mr. Linderoth. He gives special attention to the designing of churches, stores and dwelling houses. Among some of the buildings erected from his plans are the First Swedish church and parsonage on Market and Locust streets; Mr. Lantherman's villa; store and flats for Mr. J. Jaensen; store and flats for Mr. John Willems; store and flats for Mr. H. W. Hansen, on Chicago avenue; Mr. P. E. Held's villa on lake shore and Belmont avenue; villa at Jacksonville, Fla., for Prof. William M. Artrell.

Thomas McCall, who ranks among the foremost of Hyde Park architects in the finish of his work and original ideas, was born at Newburgh, Scotland, in 1856. His father, William McCall, was a shipbuilder, who united his fortunes early in life to Miss Catherine Fetheringham, by whom he had five children, four of whom are living, one having been drowned at sea. Thomas was educated in Scotland, there served as an apprentice to a practical carpen-

ter, and at the age of eighteen years he went to England and remained some time at Manchester. Subsequently he located in London, where he entered the office of E. D. Dunnean & Co., architects of considerable distinction. There he learned all of the distinctive branches of architecture in the course of five years. Leaving London in 1883, he came direct to Chicago, where he has since won a very creditable reputation in his chosen profession. Some of the most notable buildings due his efforts as an architect, superintendent or assistant superintendent of building construction have been the Home Insurance building, Board of Trade, Rialto building, residence of N. B. Ream, Insurance Exchange and the Grannis building. Although located at Hyde Park but a short time, Mr. McCall has drawn plans for some very elaborate residences and business blocks, and aside from this has drawn plans and superintended the construction of some of the best depots on the Union Pacific railroad system. He believes in the union or federation of labor, and in 1884 was chosen president of the Chicago Coöperative Building Company, which was quite an extensive organization at that time. Subsequently he contracted extensively in Hutchinson, Kas., and Denver, Colo., but quit that business to go into architecture again in Chicago, where he is widely and well known. He is a mason of the third degree and a member of the Baptist church. Besides being a property owner at Hyde Park, he owns several ranches and other valuable property in the West.

One of the older architects of Chicago is Perley Hale, 1019 Opera House building, corner Clark and Washington streets. This gentleman began the study of architecture in 1866 under the tuition of Mr. R. Rose, and in 1868 established his business in Niles, Mich., afterward removed to Burlington, Iowa, and was in the latter city for eleven years, and designed and built many schoolhouses in Iowa and Illinois, and the courthouse at Burlington, Iowa. He returned to Chicago in 1883, and has since acquired a large, influential patronage. Endowed with a thorough knowledge of the principles of his profession, he is well adapted to carry to successful completion all work which he may be called upon to perform, and he enjoys in a large measure the esteem and confidence of the community. His intimate knowledge of the requirements of his profession is well backed by a conscientious purpose to perform superior and meritorious work in its highest sense, and the large patronage extended him is a sufficient endorsement of his abilities. He is prepared to render efficient aid in the design and erection of all kinds of buildings, does his work skillfully and well, makes reasonable charges and is systematic, methodical and entirely reliable in the accomplishment of everything that he undertakes. He is a native of Michigan, born in 1847, has an excellent reputation, and is popular wherever known.

One of the oldest members of the architect's profession in Chicago is Hugh Copeland, 23, 196 La Salle street, who has had a practical experience in the exercise of his art extending over half a century, and enjoys as a consequence a large and flattering patronage. Mr. Copeland, who is a gentleman past the meridian of life, but active, vigorous and devoted to his profession, was born in Belfast, Ireland, where he followed his calling from 1839 to 1847, when he came to the United States. After three years spent in the Eastern cities he settled

in Keokuk, Iowa, in 1850, where he remained up to 1879, when he moved to this city, and five years subsequently associated with him a William McGrath, under the style of Copeland & McGrath, which firm continued to May, 1883, when the partnership dissolved and Mr. Copeland has since conducted the business alone. He occupies a neat and well-ordered office, and attends to executing plans, draughting and kindred work in the most superior and expeditious manner, while he also superintends construction designs, and estimates for all classes of work are promptly furnished upon application.

That practical brewery engineer and architect, Wilhelm Griesser, 84, 121 La Salle street, has been established here for about seven years, and he is rapidly building up a widespread and permanent patronage, though his reputation as an able and skillful brewery engineer and architect had preceded him in his coming here to reside continuously in Chicago. He was born in Germany about thirty-seven years ago, and came to America about ten years since. For three years he was a resident of St. Louis, where he was extensively employed in improving breweries and in planning and superintending the erection of others. His skill and ability are backed by an experience extending over a period of twenty-one years, and he is the patentee and manufacturer of various effective and valuable brewery appliances, among these being Griesser's bucket conveyor and elevator; Griesser's mash tub or crain valve; Griesser's steep tank valve; Herman's stationary malt kiln floors; Griesser's dumping malt kiln floors, etc. As an architect his skill is widely recognized. He planned and supervised the construction of the stock house of P. Shoenhofen Brewing Company, and of the addition to the Bartholomae, Roesing Brewing Company, of this city; Mr. Henlor's brewery, Helena, Mont.; M. Wirth Bros., Pittsburgh, Penn., and others of later date.

J. F. and J. P. Doerr, architects and superintendents, have their office in the Chamber of Commerce building, room 1216, southeast corner of La Salle and Washington streets. They have been established in business in this city since 1885, and have prominently identified themselves with the building interests, and have planned and constructed many handsome and substantial structures in this city.

George Mayhew Moulton is the son of Joseph T. and Maria J. Moulton, and was born in Readsboro, Vt., March 15, 1851. His father, who came to Chicago with his family in 1853, still resides in this city, he and the subject of our sketch doing business under the firm name of J. T. Moulton & Son. The father was born August 27, 1826, and spent his youth on his father's farm. In early manhood he went to Waltham, Mass., and was there engaged in the cotton mills and bleacheries. Upon his arrival in Chicago he immediately identified himself with the grain elevator interests, first in their operation and shortly afterward in their construction. He has since been continuously engaged in designing and constructing this class of buildings. The family is of old New England stock, Mr. Moulton, Sr., having been born in Chichester, near Concord, N. H., in which vicinity the Moultons had resided for many years. Gen. Jonathan Moulton, of Revolutionary fame, was the great-great-grandfather of the subject of this sketch. As soon as he was of sufficient age, George entered the public schools of Chicago, and it was in them, and by diligent study outside, that he secured an

excellent education. He was seventeen years of age when he graduated from the Chicago high school in the class of 1868. George Howland, now superintendent of the city schools, was principal of the high school at that time. He stood well in his class, and at the commencement exercises, held in the Crosby Opera house, he was selected to deliver an original German oration. After attending school continuously for nearly thirteen years, he at once engaged in active business pursuits. He was first employed in various capacities under his father, who for many years has been engaged in designing and building grain elevators, on an extensive scale, in all parts of the United States. While thus employed, he also learned the carpenter's trade. In January, 1870, he went with his father to Duluth, then just starting in its miraculous career of development and promise, where he was engaged in building the first grain elevator ever constructed in that section of the country. His duties were those of secretary to the vice president and general manager of the company, and as general clerk of the work. Mr. Moulton recalls with a great deal of interest the absence of railroads running into Duluth at this time, and the fact that the last seventy-five miles of his journey from St. Paul was made by sled stage; the development which has since taken place at that point has been so great as to seem almost like a dream in the life of a man not yet forty years old. The first train arrived in Duluth in August, 1870, and now the young, prosperous city is a noted railroad center. Mr. Moulton assisted in unloading the first carload of bulk grain which arrived in Duluth, which has since rivaled Chicago as a grain center, and even outstripped that wonderful city in the amount of wheat handled per annum. After the completion of the elevator, in the fall of 1870, Mr. Moulton engaged for a year with the company owning it, to operate it for them. But before the close of the year he was transferred to Stillwater, Minn., to supervise the erection of an elevator which the same company had projected at that point; and when the Stillwater elevator was finished, he remained in charge of it until the close of navigation in the fall of 1871. Then returning to Duluth for a short time, he left there in November for Chicago, arriving on Thanksgiving day of 1871, amidst the blackened ruins which the great fire had made of so large a part of the city. Rebuilding, however, had already begun, and his father being engaged to erect a large number of grain elevators, the son was employed by him as foreman on the Galena elevator. He was thus employed until the spring of 1872, when the contract to erect the Advance elevator, at East St. Louis, was taken by father and son, who had entered into partnership under the present firm name. He arrived in St. Louis March 18, 1872, and remained there about eighteen months, designing and erecting in the meantime, in addition to the Advance elevator, which was of one hundred and fifty thousand bushels' capacity; the Central elevator in St. Louis, with a capacity of five hundred thousand bushels; the East St. Louis elevator, of one million capacity; also elevators at Bethalto, Ill., and St. Genevieve, Mo., each of fifty thousand bushels' capacity; besides designing elevators at Venice, Ill., and Indianapolis, Ind. Since that time his home and headquarters have been in Chicago, though in the prosecution of his business as architect and builder of grain elevators he has visited, as representative of his firm, all the large cities and all the grain centers from the Atlantic to the Pacific, where work

of this firm may be seen. It has erected elevators in Portland, New York, Weehawken, Baltimore, Norfolk, Buffalo, Cleveland, Toledo, Detroit, Chicago, Duluth, Washburn, Winona, Minneapolis, St. Louis, East St. Louis, Kansas City, Tacoma and at numerous other places. Among them are the following with the capacity of each in bushels: Armour elevator, twenty-two hundred thousand bushels, Chicago, Ill.; Illinois Central, A and B, twenty-six hundred thousand, Chicago, Ill.; Galena, seven hundred and fifty thousand, Chicago, Ill.; Union, seven hundred thousand, Chicago, Ill.; Advanee A and B, eleven hundred and fifty thousand, East St. Louis, Ill.; East St. Louis, one million, East St. Louis, Ill.; Union East, fifteen hundred thousand, East St. Louis, Ill.; Arkansas Valley, four hundred thousand, Kansas City, Mo.; Chicago & Northwestern railway, three hundred thousand, Winona, Minn.; Central, A, six hundred thousand, St. Louis, Mo.; Union No. 2, one million, Peoria, Ill.; Baltimore & Ohio, C, eighteen hundred thousand, Baltimore, Md.; New York Central, A, fifteen hundred thousand, New York, N. Y.; New York Central, B, nine hundred thousand, New York, N. Y.; New York, Lake Erie & Western, seven hundred thousand, Buffalo, N. Y.; Michigan Central, B, six hundred thousand, Detroit, Mich.; Toledo & Wabash, No. 5, seven hundred thousand, Toledo, Ohio; Union Improvement & Elevator Company, A. E. F. and H., four million, Duluth, Minn.; Lake Superior Elevator Company, B. C. D. G. and I., sixty-two hundred thousand, Duluth, Minn.; Duluth Elevator Company, Nos. 1, 2 and 3, forty-eight hundred thousand, West Superior, Wis.; North Pacific Elevator Company, five hundred thousand, Tacoma, Wash.; Chicago, St. Paul, Minnesota & Omaha railway, nine hundred thousand, Washburn, Wis.; Grand Trunk, three hundred and fifty thousand, Portland, Me.; Norfolk & Western railroad, one hundred and fifty thousand, Norfolk, Va.; St. Anthony Elevator Company, Nos. 1 and 2, fifteen hundred thousand, Minneapolis, Minn.; West Shore elevator, fifteen hundred thousand, Weehawken, N. J.; Northern Central, No. 1, five hundred thousand, Baltimore, Md.; Northern Central, No. 2, three hundred thousand, Baltimore, Md., and Northern Central, No. 3, one million, Baltimore, Md.

In 1877 Mr. Moulton formed a copartnership with George H. Johnson for the manufacture and the application of fireproof materials for buildings. The design of the new company was to use hollowware tile for floor, partition and roof construction, wall girder and column covering. This partnership and enterprise resulted, in 1880, in the organization of the Ottawa Tile Company, and the establishment of works for the manufacture of hollow tile at Ottawa, Ill. The business of the company increasing rapidly, a large acreage of clay land was purchased, and the plant enlarged, until it has become one of the largest clay manufacturing establishments in the world. The name of the company was finally changed to the one it now bears—the Pioneer Fireproof Construction Company. This corporation has a paid-up capital stock of \$250,000, to which has since been added and invested in the business a large surplus of earnings. The company is a leader in its line, and Mr. George H. Johnson having been the inventor of the forms of hollow tile construction now so generally used in large buildings, and having first introduced this form of building, the Pioneer Fireproof Construction Company is unquestionably entitled to be regarded as precisely what its corporate name implies.

Mr. Moulton has occupied the position of president of and principal stockholder in the company from its organization until the present time. In 1885 this company purchased a half-interest in the River Bank Coal Company of Streator, Ill., in which Mr. Moulton has since become the largest stockholder and president, the company being actively engaged in the business of mining and shipping coal to the West and Northwest. Mr. Moulton is also president of the Commerce Vault Company, director in the Chicago Deposit Vault Company, and a member of the directory of the Chicago Cold Storage exchange. He is also a stockholder in the Masonic Fraternity Temple association of Chicago, the Masonic Temple association of Joliet, Ill., and of the World's Columbian exposition. In 1884 he became one of the incorporators of the Knights Templars and Masons Life Indemnity Company, a fraternal coöperative company, of which he was vice president until 1890, when he succeeded the late Dr. J. Adams Allen as president. Managed with ability, this company has now \$22,000,000 insurance in force, and has enjoyed a steady growth that is a source of pride to Mr. Moulton. In 1885 he became one of the incorporators of the Illinois Masonic orphans' home, and was elected president of the association, filling that office until 1890, when he retired voluntarily, remaining, however, in the board of trustees. During the presidency of Mr. Moulton the association acquired a property which is valued at \$50,000, and practically free from debt. The Home is in practical operation, and is a delightful protection to a considerable number of dependent Masonic orphans. Mr. Moulton is an enthusiastic Mason, and has taken the following degrees in Masonry: Raised master Mason in Covenant lodge, No. 526, A. F. & A. M., February 12, 1875; exalted Royal Arch Mason in Corinthian chapter, No. 69, R. A. M., May 17, 1875; greeted select master in Siloam council, No. 53, R. & S. M., August 7, 1875; created Knight Templar in St. Bernard commandery, No. 35, K. T., September 1, 1875; created S. P. R. S., thirty-second degree, in Oriental consistory, A. A. S. R., June 4, 1880. He was crowned as sovereign grand inspector general, thirty-third degree, A. A. S. R., for northern jurisdiction U. S. A., September 20, 1887. He was created knight of the red cross of Rome and Constantine, knight of St. John of Palestine, and guardian knight of the holy sepulcher, in the grand council of the state of Illinois, October 25, 1875. He also holds membership in Queen Esther chapter, O. E. S., and Medina temple, A. A. O., nobles of the mystic shrine. Nor has he been an idle member of these various bodies. On the contrary, he has been an almost constant, faithful and efficient office bearer, serving with fidelity in many of the humbler official positions, and with distinction in many of the most important in the gift of Masonry. Among the positions he has filled are the following: In lodge, senior deacon, 1877, and junior warden, 1878 and 1890, and senior warden in 1891; and, in chapter, king, 1884 and 1885, and high priest, 1886, receiving order of high priesthood, October, 1886; in council, thrice illustrious master, 1884; in commandery, 1883; in Chicago council princes of Jerusalem, sixteenth degree, A. A. S. R., sovereign prince grand master, 1884-5; in consistory S. P. R. S., thirty-second degree, A. A. S. R., second lieutenant commander, 1885-6-7, and first lieutenant commander until January, 1890, when he became the illustrious commander-in-chief; in Illinois grand council of deliberation, A. A. S. R., grand standard bearer

for three years from 1885, and was elected minister of state and grand orator for 1890-92; in grand chapter, R. A. M., grand master first veil, 1888; grand master third veil, 1889; grand royal arch captain, 1890, and now occupies the position of grand principal sojourner; in grand council, R. & S. M., grand conductor, 1886; deputy grand master, 1887-8; grand master, 1889; in grand commandery, K. T., grand sword bearer, 1885; grand standard bearer, 1886; grand captain general, 1887; grand generalissimo, 1888; deputy grand commander, 1889; grand commander, 1890. At Washington, in 1889, he was appointed grand standard bearer of the grand encampment, K. T., U. S. A., for the term ending August, 1892. In 1886 Mr. Moulton was commissioned as major in the Second regiment, Illinois national guards. He resigned his commission in January, 1890, retiring when Col. H. A. Wheeler—at whose solicitation he entered the service—retired from the command of the regiment. While in commission he served in the two weeks' campaign at the Union stock yards, during the noted labor riots in the fall of 1887, and was with his regiment at all of its encampments, and wherever it was called upon for duty. He is a member of the Union League club, Miltons club, Acacia club, Sons of Vermont, Chicago Art Institute, and the Illinois Association of Architects. Mr. Moulton was married March 12, 1873, in Burlington, Iowa, to Anna Florence Garland. They have two children—Edith May, who was born at Winona, Minn., and Arthur Garland, who was born in Chicago. The family reside on Calmet avenue, in the homestead of the late Gen. John A. Logan, which, after General Logan's death, Mr. Moulton purchased, remodeled and enlarged, until it is a very handsome and commodious residence. Amidst the pleasant surroundings of home life, and with an exceptionally successful business career, Mr. Moulton has much reason to be satisfied, and the community in which he lives owes much to the enterprise and spirit of such men as George M. Moulton.

The occupancy by Marshall Field & Co. of their palatial warehouse, bounded by Fifth avenue, Adams, Franklin and Quincy streets, marked an era in the development of Chicago. The desire of other large firms to locate near the new center had created a demand for large, imposing and ornate structures that tested to the utmost the skill of the architect. Among those whose abilities contributed to render this part of the city beautiful is Herman B. Seely, room 45, 95 Washington street. His buildings are prominent by reason of their graceful and pleasing architecture combined with simplicity of style and freedom from affected ornamentation. The six-story building for A. T. Ewing on Fifth avenue near Jackson, the building for F. P. Owings on Jackson street near Franklin and the eight-story building on the northwest corner of Fifth avenue and Jackson street, are evidences of his skill. Mr. Seely has also executed a large amount of store and flat work on Cottage Grove avenue near Thirty-seventh street.

A prominent member of the Western Association of Architects is Horatio R. Wilson, No. 218 La Salle street. Mr. Wilson was born and educated in New York city, and early manifested a marked aptitude for architecture. He has had about sixteen years' practical experience in his profession, and has been established in this city since 1880. During this period he has executed many important commissions, and has achieved a high reputation as an

original designer of plans. Some of the leading residences and business buildings that have been erected in Chicago since 1880 have received the benefit of his master hand, and were erected under his superintendence, notably the elegant residences of Alexander Moody, J. M. Ager, D. H. Conklin, Charles J. Hall and others. He also builds largely for himself, and makes this the specialty of his business. His work speaks for itself, while his promptness and reliability in the execution of all commissions serve to commend him unreservedly to popular favor and public patronage.

One of the most skillful, as well as successful, men in his profession in Chicago is Mr. Edward E. Snyder, the well-known architect, of the firm of Snyder & Nothnagel, 1307, 324 Dearborn street. This gentleman established himself here in 1884, and, by close attention to the duties of his profession, has built up a reputation in this city that is bringing his firm a large and constantly increasing patronage. He is thoroughly provided with every facility for the prompt and efficient accomplishment of the business, resulting in his securing for his patrons the most attractive and satisfactory results. Wherever his skill is brought into play, he leaves an enviable reputation behind him. He makes a specialty of private property, and the many specimens of his skill and artistic taste throughout the city are greatly admired by connoisseurs, and a source of delight to owners and occupants. Mr. Snyder is a native of Indiana, and an experienced draughtsman and designer.

Chicago bears evidence everywhere that her architects are among the ablest to be found anywhere, and, in fact, they have to be so in order to succeed here, an architect not possessing ability soon being left behind in the race. A successful representative in this profession is Mr. Golfried Thiel, whose office is located at No. 700 Milwaukee avenue. He was born in Germany thirty-one years ago, and has had large practical experience in what is admittedly one of the most exacting and important branches of scientific and artistic activity. He received a thorough training in his profession in his native land. For three years he was a student in the Builder's school at Gotha, and for a like period was connected with the Polytechnic school at Langensalza. About seven years ago he came to reside in Chicago, and he at once acquired an influential patronage, that has ever since been increasing. Among many others, he has designed and superintended the erection of buildings for the following persons: Adam Ochs, Hoyne avenue and Ewing place; Dr. G. M. Emrick, corner Chicago and Ashland avenues; Dr. John Tascher, corner Chicago avenue and Runsey street; Henry Gainer, Milwaukee and Evergreen avenues; E. Hogenson, corner May and Curtis streets; W. Henning, vinegar factory, North avenue; Ch. Schweichler, corner Lincoln and Bryson streets; R. Brueckner, Ashland avenue, near North avenue; Powell Brothers, corner Milwaukee and Powell avenues, and William Baylies, 3825 Dearborn street. Mr. Thiel devotes all his energies to his favorite profession, and conscientiously discharges his duties to all favoring him with commissions. He employs a full force of talented draughtsmen, and his plans are always complete in detail and accurate, while his estimates and calculations are based on the most practical and comprehensive knowledge of quantities and values.

Among the well-known architects of this city are Louis J. Schaub, 214 Milwaukee ave-

nue, and Robert C. Berlin, 74, 234 La Salle street, who were formerly partners under the firm name of Schaub & Berlin, architects, at 61 Ashland block. Of this firm the following notice is found in a work issued in 1887: "Among the leading architects of Chicago, who are thorough masters of their art in all its branches, is the firm of Messrs. Schaub and Berlin, who have been engaged as practical architects since 1872, and established themselves here in the practice of their profession in 1884. Since that time they have designed and carried to successful completion many important public buildings, business structures and private mansions in this city, and throughout the state. They closely follow specifications in supervising constructions, and in every possible way subserve their patrons' best interests. Special attention is given to the designing and erection of fine private dwellings, and their aid and counsel in this branch of work is in constant demand all over the state. The members of the firm are Messrs. Lonis J. Schaub and Robert C. Berlin. Mr. Schaub is a native of Milwaukee, Wis., and has resided in Chicago since 1863. Mr. Berlin was born in Putnam county, Ill., graduated at the Polytechnic school in Zurich, Switzerland, and came to Chicago ten years ago. Both are prominent members of the Western Association of Architects and the Illinois Association." The careful attention to details which characterized the work of this firm is observed in that of its former members individually.

Among the talented and reliable architects of Chicago is the firm of Burrous & Donnellan, 45, 113 Adams street. The business of this firm was inaugurated, in 1885, by Mr. J. J. Donnellan, and the firm of Donnellan & Nothnagel was organized the following year, C. W. Nothnagel being admitted to a partnership. The firm has since become Burrous & Donnellan, the first named member being William S. Burrous. Messrs. Burrous and Donnellan are both men of rare professional attainments, having had a thorough mechanical training, and possessing a complete knowledge of the art in all its details. They are prepared with all available facilities and resources to successfully carry to completion any architectural undertaking, and both as designers and superintendents accord the utmost satisfaction to their patrons. Proofs of the skill and ability of the firm are numerous throughout the city, many of the private residences planned and erected by them being especially admired for their stability and elegance. The care bestowed upon every department of their work reflects the highest credit upon their honorable and business-like methods. A competent corps of assistants are employed, and promptness, accuracy and faithfulness characterize all the transactions of the firm. Mr. Donnellan is a native of Chicago, with an experience of sixteen years as an architect.

Among the thoroughly trained architects of the Garden city is Mr. Theodore Lewandowski, whose office is located at 26 West Lake street. Mr. Lewandowski is a native of Bromburg, Prussia, and a graduate of the Hanover university as a mechanical engineer and architect. He established himself in the practice of his profession early in 1887, and his genius has been recognized and his future success abundantly assured. He is prepared to make designs for and superintend the erection of buildings of all kinds, including residences, churches, factories, etc., also designs for machinery of every description, having a

proper knowledge of the laws of form and lines of beauty. Mr. Lewandowski is the inventor and patentee of the automatic tilting malt kiln floor. He may be depended upon to erect structures of symmetry and magnificence, pleasing to the eye and of substantial merit. He is earnestly devoted to his art, and is doing much to increase the architectural adornment of the city. His services are always promptly rendered, and his charges are invariably fair and reasonable.

Robert I. Sloan, chief engineer of the Chicago & South Side Rapid Transit Company, whose office is at 637 Rookery building, was born in Flemington, Hunterton county, N. J., in 1837. His father, W. H. Sloan, was a prominent member of the bar of that state. In 1852, when he was fifteen years of age, young Sloan was employed as a rodman with the engineer's corps of the Flemington & Lambertville railway in New Jersey, and in the service of this corporation he remained three years, as rodman, instrumentman and general assistant. During the last year of this connection, he was in charge as engineer of six miles, or one-half of the line, completing the work and final estimates. In 1855 he entered the Rensselaer Polytechnic institute, of Troy, N. Y., the oldest engineering institute in the United States, and graduated there in 1859. After his graduation, he went to Kansas and became an assistant engineer on surveys and construction of the St. Joseph & Marysville railway, now merged into the St. Joe & Denver line, and assisted to take the first locomotive over the Missouri river on a flat boat from St. Joseph, Mo., to Elwood, Kas. From the fall of 1861 to the fall of 1864 he was an attache of the quartermaster's department, United States army, and was assigned to the superintendency of the distribution of forage supplies to the Army of the Potomac from Alexandria, Va., to points along the lines of the military roads. After the close of the war, the then just developing petroleum industry attracted his attention, and during the year, beginning in the fall of 1864, he was employed in making oil land surveys in Western Pennsylvania, with office at Franklin. In the fall of 1865 he identified himself with the celebrated Pennsylvanian civil engineer, William F. Shunk, in the surveys of the Pennsylvania portion of the Atlantic & Great Western railway, and was prominently connected with that work for about a year. He had become known as a careful surveyor and engineer, and in 1867 his services were secured as assistant engineer under Mr. Shunk, Colonel Worrall and Gen. James H. Wilson, upon the United States survey of Rock river, from Lake Winnebago to its mouth. He went to Trenton, N. J., in 1868, and engaged in lot surveying and building operations in that city until 1870, when he was appointed city engineer. From 1870 to 1875, inclusive, he held this office, and after retiring, remained in Trenton, doing general engineering. In the meantime, Mr. Shunk had assumed the office of engineer in charge of surveys on construction of the Metropolitan Elevated railway in New York city, under Gen. James H. Wilson, and early in 1876 he called Mr. Sloan to his aid, offering him the position of assistant engineer, which the latter accepted, removing to New York in February of that year, and performing the duties of engineer in charge of street construction of the Metropolitan road, and the Sixth, Eighth and Second avenue lines until 1881, when he became engineer in charge of the maintenance and construction of the street-

ure, tracks, signals, buildings and water supply of the Manhattan Elevated railway, which embraced the entire elevated system in New York. His services were recognized by the management of the Manhattan L road by his promotion in 1882 to the position of chief engineer, in which he served with distinguished credit in the operating department until March 12, 1890, when he accepted the position of chief engineer of the Chicago & South Side Rapid Transit Company. The efficient character of his services here is too well known to require any special notice in this connection. It may be said of Mr. Sloan that his life has been devoted practically to engineering, his specialty having been surface and elevated railway work, signals, etc., and city surveys, in which he has no superior, and he is regarded as one of the most skillful, reliable and faithful engineers in the country, his judgment on engineering questions being much valued on account of his long practical experience. He is a member of the Engineers' club of New York city, of the Western Society of Civil Engineers and of the American Society of Civil Engineers. His professional advancement, while rapid enough to excite comment, is universally regarded as the legitimate reward of industry, integrity, honest merit and well-directed effort. Though not taking part in active politics, he has pronounced views on all public questions, the bias of which places him in the Republican ranks. He is a Mason, and prominent in business and social circles. He was married in 1878 to Miss Etta Rupert, of Trenton, N. J., and has a son named Robert Shunk Sloan, in honor of his almost life-long friend and adviser, one of the first to recognize his ability and call him to higher and still higher walks in his profession. Mr. Sloan is yet in the prime of life, and, judging from his past success, no one can doubt that if he is spared he will take a prominent place in the history of the engineering development of the early future, and add luster to an already successful career.

Frazier & Roy, able and skilled architects, have designed many handsome buildings during their business career, the following of which have been erected by Mr. A. A. Frazier individually: A large hotel and an opera house at Arkansas City, opera house at Sedalia, Mo., several school buildings, courthouses, opera houses, etc., throughout the states of Missouri and Kansas. Besides these, most of the notable blocks, flats and residences in Kansas City, Mo., stand as a monument to his skill and knowledge of his calling. A. A. Frazier was born in Belmont county, Ohio, August 21, 1855, and there he was given a practical education, which well fitted him for the practical life he has led. His parents were James B. and Mary Ann. James Frazier, the former, was a tailor by trade, which calling he learned very young; he is now getting very old. A. A. Frazier, from the first, gave much of his attention to architecture, and after becoming well posted in this branch of business he took charge as foreman for a large contractor, in order to gain a practical knowledge of the business, where he did satisfactory and very creditable work. From this place he removed as far west as Kansas City in 1883, but since September, 1890, has been a resident of Chicago, and a partner of T. G. Roy within the last eight years, has been superintendent and drawn the plans for at least five hundred houses, nearly all of which have been models of architectural skill and beauty, as well as being noted for the sub-

stantial and durable manner in which they have been constructed. Much credit is due the accomplished architects for the beauty of cities and the magnificence of public buildings and residences, and from ancient time the architects have occupied a prominent place in society from an artistic standpoint, and deservedly, too. Mr. Frazier has earned an excellent reputation for the skill and artistic ability which he displays in his work, and on this account he has built up an excellent business in this city, which is constantly on the increase. The credentials which he brought with him from the West were first-class, and during his business career here he has verified the many words said in his praise as to his character and qualifications. He has attained the highest degree in the Knights of Honor, and is an earnest member of the Church of Christ. On June 10, 1880, he was married in Howard county, Mo., to Miss Tela Turner, by whom he has one child, Guy Irving, who was born in Missouri in 1881. T. G. Roy, Mr. Frazier's partner, is a man of sterling worth of character, and is a very successful and accomplished artificer. He was born in Marion county, Mo., on a large farm about thirty miles west of the Mississippi river, and was there also reared and educated. Upon attaining manhood he went to St. Joseph, where he learned the trade of carpenter and architect, proving himself very apt and skillful in the use of tools. Upon starting out for himself he at once became an extensive contractor, for his ability was well known, and while associated with his brother, under the firm name of Roy Bros., he operated a planingmill and erected some of the finest buildings of that city. After forming a partnership with Mr. Frazier at St. Joseph, September 14, 1890, he came to Chicago, excellently recommended to the business circles of this city, and has carried out his contracts to the letter. The following are some of the buildings which have been erected by him and which reflect some credit upon his ability. He furnished the interior finish and furniture for the Centre block, which is now occupied by the Emery Dry Goods Company; the terminal freight house on Fourth street; an addition to the Convent of the Sacred Heart; the Kansas City, St. Joseph & Council Bluffs roundhouse; the residence of J. W. McAlister, Esq., cashier of the Saxton National bank; a number of churches, bank buildings, hotels, schoolhouses, that space will not permit to be mentioned. He was married on October 31, 1888, to Mrs. Cora L. Moore, and by her has a daughter, Lola Margurete, who was born November 22, 1889. Mr. Roy's father, F. J. Roy, was reared in the Blue Ridge mountains of Virginia, where he was born about 1820. His occupation in the early part of his life was as a merchant, later he settled on what is known as the Roy place, in Marion county, Mo., where he became quite wealthy. He died in 1887. He was married, when a young man, to Miss Vienna Stinson. To their marriage a very large family was born. Eight sons and two daughters became grown. Since the father's death one son and daughter have died. T. G. Roy is the third youngest of the family.

The firm of Small & Bishop are among the best representative architects in Chicago, and are located in the Timmerman Opera House building, in Englewood. The firm was established in March, 1890, and consequently their reputation here and their success have yet to be established. However, notwithstanding the shortness of the time, they have already

performed a considerable amount of excellent artistic work, and are already recognized by the building craft of the city, and are standing at the top of their profession. During this time some of the most substantial, artistic and beautiful buildings in the suburbs have been designed by these gentlemen. Among the buildings planned by them and which attest to the artistic nature of their work may be mentioned the following: The fine residence of the colonial style of architecture in Auburn Park, built for C. P. Lowell (this building alone is sufficient to establish the reputation of these architects; it is a beautiful structure and is ornamented with Strahan's composition, a description of which will be found elsewhere in this work); at West Auburn, the residence of W. B. Kennedy is another fine illustration of their beautiful designs of residences, also at West Auburn four residences for W. H. Stubbing were designed by them, and the residences of J. G. Clunien and D. A. Solon. The large warehouse of the Belt Transfer & Storage Company, at Seventy-sixth and Wallace streets, which was constructed upon scientific principles, and has a floor space of three hundred and seventy-five thousand square feet, proves that this firm can design enormous structures as well as smaller ones. Many other buildings on the south side show the excellencies of their work. Among them are the following: The fine three-story-flat building, known as the Columbia block, on Stewart avenue, between Sixty-eighth and Sixty-ninth streets, the front of which structure is of buff Bedford stone with copper trimmings, and has modern projecting store fronts; a flat building for A. B. St. John on Sixty-fifth street, between Stewart avenue and Harvard street, which building is forty-eight feet wide and has a beautiful front of buff Bedford stone and contains all modern improvements; a fine stone residence for George I. Case, at Auburn Park, and many others. Among the contracts for the ensuing year are a number of fine structures at Willmette, on the Sheridan drive; and at Evanston. Though these architects have been in the city but a short time, they are designing at the rate of one hundred buildings per annum, which fact speaks in the highest terms of their capability and activity. So great is their work that they find it necessary to keep constantly employed a superintendent. It is interesting to know something more of the private lives of men who, in so brief a time, can come so prominently before the public notice. Mr. George A. Small was born in Jeffersonville, Ind., in 1857, and at the age of fourteen years he began the study of his profession under the instructions of W. H. Redin, in Louisville, Ky., a prominent architect, with whom he remained for several years. He then began for himself and chose the South for his field of labor. He first went to Aberdeen, Miss., where he erected the Presbyterian church, and also many residences. From there to Atlanta, Ga., where he engaged in his profession and built a large number of well-known buildings. In 1889 he came to Chicago, and for one year acted as draughtsman in the offices of various architects, after which he established his present business. In 1887 he was married to Miss Louise Nixon, by whom he has two sons. They reside in Englewood. Thomas R. Bishop is a native of Chicago, his birth having occurred in 1868. He was educated in the public schools of the city, and graduated in 1884. He at once entered the office of John T. Long, and began to fit himself for the calling of an architect, and later traveled for some months for the purpose of perfecting himself in his work. After his

return to Chicago he resumed his studies, and, in 1889, became associated with Mr. Small, and makes a specialty of designing. He is a member of the Architectural Sketch club. His father was for many years an extensive builder of the city.

Charles F. Whittlesey, although young in years, has earned a wide reputation for the skill and artistic ability he displays in his work, and on this account he has built up an excellent practice which is constantly increasing. He is a native of Alton, Ill., where he was born March 10, 1867, and in the town of his birth his scholastic education was acquired. In 1882 he came to Chicago and began his architectural career with Addison & Fiedler, remaining with them until 1890. His first contract as an architect was for the Fourth Baptist church, on the corner of Monroe street and Ashland avenue, which structure is a very handsome one of stone, and does credit to Mr. Whittlesey's taste and skill. The roof trusses for this church are among the largest in the city, and prove their designer to possess a thorough knowledge of engineering. Among his other works are a fine residence for B. T. Skinner, besides various others on Michigan, Prairie and Calumet avenues; the West Side Church of Christ; the Central avenue Methodist Episcopal church at Evanston, and a large warehouse at the Washington street bridge. His office is at 600 Stock Exchange building, and, although he has been in business for himself but a short time, he has had the best of practical experience, is the master of his work, and bids fair to become one of the local leaders in architectural science.

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CHAPTER XIX.

BRICK MANUFACTURERS AND DEALERS, AND MASON
CONTRACTORS.

MR. D. V. Purington was born at Sidney, Kennebec county, Me., January 22, 1841. He was educated in the common schools, and spent one year at Oak Grove seminary, a French boarding school, at Vassalboro, Me. He left home at the age of eighteen, and spent two years teaching school in New Jersey. He entered the Union army as a private soldier, in the Fourth New Jersey volunteers, in August, 1861, and was honorably discharged January 8, 1866, with the rank of captain. He soon afterward entered the Freedman's bureau, where he remained until April, 1869, when he came to Chicago and engaged in the lumber business. After the great fire of 1871 he became associated with the firm of Straus, Hahne & Co., brick manufacturers, and in this business he has continued successfully since. Mr. Purington is the pioneer in introducing the Chambers brick machine for the manufacture of common brick in Chicago, and was also the first in this city to introduce the artificial drying of brick and the use of steam shovels to dig clay. In this connection it may also be stated as a historical fact that Charles S. Purington, a brother of D. V., was the first to introduce crude oil as a fuel for the burning of brick in Chicago. Mr. Purington is now president of the Purington-Kimbell Brick Company, which organization has the largest brick works, under one management, in the United States. The capacity in 1890 was seventy million brick. He is also president of the Purington Paving Brick Company, of Galesburg, Ill., which has one of the best appointed plants of the kind to be found in the world. Mr. Purington's standing as a citizen and business man is very high.

Frank Alsip, one of the leading brick manufacturers of the world, reflects on himself the indomitable perseverance and courage which is credited to Chicago. Born at Pittsburgh, Penn., November 7, 1827, he entered the ranks of the brickmakers in 1839, at which work he remained for five years, when he became apprenticed to McLelland & Ecker, mason contractors of Pittsburgh, for the purpose of learning the trade of bricklaying. He followed the fortunes of a journeyman bricklayer and foreman until 1849, when the Argonauts won him to their cause. Crossing the great plains, he found himself a prospector in a country of gold; but, after all, it was not industry, and in 1852 he recrossed the continent to seek the

surer and less dreamy methods of progress which his trade offered. Arriving in St. Louis, he worked at his trade of laying brick for various contractors in that city for one year, then drifted toward his native city, and in 1853 became a partner of McLelland, under the title of McLelland & Alsip, contractors and builders. In 1854 this firm established its own brick yards, and carried on a large building and brick manufacturing business until 1857, when Mr. Alsip moved to Prairie du Chien, Wis. In this western town he soon established the same line of business, and extended his building operations throughout northern Wisconsin, western Iowa, and southern Minnesota, with base of brick supply at his yards in Prairie du Chien, Wis., and McGregor, Iowa. The majority of the larger buildings erected in the territory named, prior to 1871, are his work. The destruction of Chicago opened a new field for those engaged in the building arts, and he who accomplished so much on the prairies of the Northwest did not fear to enter into competition with the thousands who flocked hither to share in her restoration. The partnership of Hayt & Alsip was formed, and the beginning of one of Chicago's greatest industrial firms made. From that period until the present time this firm name is connected most intimately with the brick manufacturing industry of Chicago. In 1885 the firm of F. & W. H. Alsip was established, consisting of Frank Alsip and his son William H. Alsip, Mr. Alsip still continuing his partnership with Mr. Hayt in the copartnership of Hayt & Alsip. In 1887 the copartnership of F. & W. H. Alsip was dissolved, for the purpose of incorporating the Alsip Brick Company in its stead, and Frank B. Alsip, another son, was admitted as a member of the new concern, the officers of which are Frank Alsip, president and general manager; William H. Alsip, secretary and treasurer, and Frank B. Alsip, superintendent. The copartnership of Hayt & Alsip, which was formed in 1872, was continued until 1889, when it was merged into a corporation under the name of Hayt & Alsip Company, the officers of which are Henry C. Hayt, president; C. D. B. Howell, secretary, and Frank Alsip, superintendent.

The yards of the Alsip Brick Company and the Hayt & Alsip Company, located on Forty-third street, produce over fifty million brick per annum, and those of the Alsip Brick Company, at Chicago and Hamlin avenues, about seventeen million, while the new yards of the Alsip Brick Company, at Blue Island, have a capacity of thirty-five million brick per annum, making a total capacity at Mr. Alsip's various yards of about one hundred million of brick per annum. This last-named yard is one of the largest and most completely equipped brick yards in the West. Located upon a tract of one hundred and fifty acres of land, with sheds eighteen hundred feet long, they offer extraordinary facilities for work. They contain sixteen miles of one-inch pipe, the longest line of pipe in the world used for the drying of brick. The dry floors, 212x250 feet, are different from any other dry floors, being equipped with the latest and most improved apparatus. The A. J. T. Noye engine of two hundred and sixty-six horse-power, and the use of petroleum instead of coal and wood, are interesting features of this yard. From this yard they are enabled to ship brick to all local points, having a spur track connecting the yard with the Chicago & Calumet Terminal Belt line. Mr. Alsip is the patentee of the machine used for rolling and crushing the clay and for

separating the stones from the clay. This machine is now adopted and used by all manufacturers of brick in Chicago. He is also the inventor of much other valuable machinery, such as mud machine and other brick-making devices. The Chambers machine, which is in universal use in Chicago, under the improvements made by Mr. Alsip, has doubled its usefulness and capacity since he first began using it.

Mr. Alsip was the first man in the West to use coal as fuel. The eyes of manufacturers of brick were turned toward him, as it was said coal could not be used to advantage. Time soon proved Mr. Alsip's idea correct, practical and economical, and soon the other leading brickmakers commenced to use coal.

Among some of the great modern buildings in which the Alsip Company's brick are used, are the Rialto building (three million), Home for Incurables (one million five hundred thousand), the Wisconsin Central depot (about five million), the United States Appraiser's building (one million three hundred thousand), the Masonic temple, Northern hotel and many others.

Mr. Alsip, individually, owns the largest brick manufacturing interests in the world, and he is recognized as the most practical brickmaker in the West. Mr. Alsip resides in a beautiful residence at 445 Ashland boulevard; has six children—three boys and three girls. He was married January 30, 1855, at Pittsburgh, Penn., to Mary Jane Smiley, the daughter of James and Jennie (Smith) Smiley.

Frank B. Alsip is a native of McGregor, Iowa. At the age of seventeen, he left school and entered the employ of Hayt & Alsip, to learn the mysteries of brick manufacture. After five years' service, he became foreman of the F. & W. H. Alsip Brick Company, and served in that capacity for two years, when the concern was incorporated under the name of the Alsip Brick Company, and he was made superintendent, which position he still holds. He is also superintendent of the Hayt & Alsip Brick Company, his duties in the two connections involving the supervision of yards whose daily capacity is fifty million of brick. Mr. Alsip is a natural-born mechanic and understands every detail in brickyard construction and equipments, and is recognized as one of the best brickmakers in the West. In 1887 he married Nellie, daughter of Dr. A. C. and Sarah C. Bell, and has one child, now about a year old.

William H. Alsip was born in 1858, at Prairie du Chien, Wis., and is therefore one of the youngest of the prominent and successful business men of Chicago. He is a son of Frank and Mary J. (Smiley) Alsip, and upon reaching a suitable age, graduated from the Chicago grammar school, the Chicago high school, the university of Chicago, and the Union college of law. He was married September 30, 1882, to Miss Marcella Cusack, of Chicago, by whom he has one son. He began his business career as a foreman in the brickyards of Hayt & Alsip, where he remained two years. He then went into partnership with his father, under the firm name of F. & W. H. Alsip, and two years later incorporated the partnership under the name of the Alsip Brick Company, taking as a partner his brother Frank. Under this name they have, during the past four years, done one of the largest businesses in the West. Their yards are located at Forty-third and Lincoln streets; at Chicago and Hamlin

avenues, and on the Calumet Terminal railroad, about three miles from the town of Blue Island. The output of this company is about seventy million of brick per annum. They manufacture common bricks only, and their trade is enormous. Mr. Alsip affiliates with the Republican party.

Adam. J. Weckler is a very extensive manufacturer of brick, and has yards at Diversey and Clybourn avenues, at Western and Addison avenues and at Blue Island, Ill., his main office being at room 32, 161 La Salle street. His establishments are among the leading business organizations of Chicago and as institutions of their kind stand among the foremost. His yard was first started in 1874, and from a very small beginning has extended its connection over many states of the Union. In March, 1879, he purchased thirty acres of land on Clybourn avenue and Diversey street (which was being used as a pasture) for \$23,000 and soon started in his present calling, manufacturing twenty-four thousand brick per day. Two years later he manufactured sixty-one thousand per day and at the present time the capacity of his three manufactories is two hundred and twenty-five thousand every twenty-four hours, or twenty-eight million a year. This company was first composed of Adam J. and William H. Weckler in 1886, at the corner of Addison and Western avenues, and the Weckler-Prussing Company was organized the same year, Alexander Prussing having charge of the yard at Blue Island, Ill., on the Chicago & Grand Trunk railway. Mr. Weckler has been a director of the Builders & Traders' exchange ever since its organization, with the exception of two years. Mr. Weckler was born at St. Joseph, Mich., in 1842, to John and Barbara (Berg) Weckler, and in his youth was given the advantages of a common-school education. At the age of twelve years he entered the retail grocery establishment of John L. Gray, but one year later he entered the dry-goods establishment of Brown Bros., remaining with them for about six months. When fifteen years of age he became an employe of G. & C. W. Church & Cady, of Chicago, with whom he remained until the fall of 1870, at which time he engaged in the wholesale and retail cigar and fancy liquor business on North Clark street, but in the great fire of October, 1871 he was burned out and left considerably in debt. He then took charge of and closed out the business of the Lill Chicago Brewing Company, in which his wife had an interest, and of which William Lill was president, the latter being also the owner of a brick yard, large for the time, in which Mr. Weckler became a partner in 1874. Mr. Lill died in 1875 and Mr. Weckler, who was executor and trustee, closed out the business and settled up the estate. He was married in Februrry, 1867, to Miss Catharine Diversy, daughter of Michael Diversy, a partner of William Lill. To Mr. Weckler and his wife twelve children have been born, of whom three are living: Mrs. Alexander Prussing, Adam F. and Catharine. Mr. Weckler's father was a Prussian by birth, and in October, 1836, landed in Chicago, his wife coming to this country from Bavaria in 1840, their marriage taking place the following year. As they are both still living, they will celebrate their golden wedding this year (1891). William Weckler, brother of Adam J., was born in Chicago, March 10, 1861, and they have three brothers and four sisters, all of whom are residents of Chicago. Adam J. Weckler was the Democratic assessor and member of the board of trustees

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W. G. & Co. N. Y.

John J. Astor

for the town of Lake View for nine years. He hauled sand for the first Nicholson block pavement ever put down in Chicago, for his father, who also had the contract for planking and improving State street from Randolph to Twelfth street, and although but a lad, he set spikes with a light hammer for the men to drive.

Daniel Freeman is contractor for pressed brick work for the firm of Freeman, Hart & Co., which was established in 1878 and has continued without change until the present. This firm is one of the ablest in the city in its special line, and during its career it has executed all or part of the brick work on some of the best buildings of the city, among them the following: J. V. Farwell & Co.'s wholesale building at Adams and Market streets; the C. B. Farwell residence, Dearborn station, Rialto building, Rookery building, Archbishop Feehan's residence, the Grand Central depot, the Chicago hotel, the Fessenden buildings, at the corner of Van Buren and Market streets, the Masonic temple, and scores of residences and smaller business structures throughout the city. The operations of this concern have not been confined to Chicago, but have extended to many distant cities. It did the brick work on the Hammond building at Detroit and upon buildings in Dubuque, Iowa, Bay City, Mich., etc. It is not too much to assert that Mr. Freeman is one of the most extensive, able and active contractors in his line in the West. He was born in England May 26, 1852, and is now in the prime of life, full of that energy so characteristic of Chicago business men. He was educated at the National school in England, succeeding which he spent one term in a prominent art school in Sheffield. In the fall of 1871 he came to Chicago, having previously learned his trade in England. He first worked as a drug clerk and later as a brick mason. His aptitude for his business seems to have been inherited from his ancestors, for several generations before him were prominent masons and contractors. The father, who is yet living in Melbourne, Australia, was a successful mason contractor. His mother died at Sheffield, England. Mr. Freeman married, in 1877, Miss Eva J. Robinson of Chicago, who died in 1887. Some time after this Mr. Freeman took for his wife Miss Grace E. Travis of La Grange, Ill., a cousin of his former wife. By his late wife he had two children, Louis E. and Stella L., and by his present wife two children, Vivian T. and Cecil R. Mr. Freeman is a member of the Builders & Traders' exchange and vice president of the Mason & Builders' association. His grandfather, George Freeman, was a prominent member of the Masonic order in England, and was, at one time, head of a chapter in that country. Mr. Freeman is a member of Dearborn lodge No. 310 A. F. & A. M., Englewood chapter No. 176, Englewood commandery No. 59, and of the Oriental consistory and Scottish rites of Englewood. He is also a member of the Englewood Republican club.

J. J. McKenna, brick manufacturer, has his office at 40, 177 La Salle street, his brick-yards at the corner of California and Archer avenues. William McKenna, the father of John J. McKenna, was born in the County Donegal, Ireland, in 1824, and in 1844 came to the United States and at Haverstraw on the Hudson river, N. Y., he began learning the brick manufacturing business, in which he engaged on his own account in 1847. In 1856 he came to Chicago as superintendent of the brickmaking interests of the firm of Gibbs & Moran,

which is accredited with having been the first firm to engage in this business in this city with machinery. William McKenna has been engaged in the brick business in Chicago for the past thirty years, and, as a very successful burner, has burned brick for the following firms: in 1856 Gibbs & Moran; in 1861, the Dunlap Brick Company; in 1865, the Cutting & Walker Brick Company; in 1868, E. R. Gard & Co.; in 1869 and 1870, Orion Smith; in 1871, the United States Brick Company. From 1871 to 1888 he was in business for himself. J. J. McKenna was born at Haverstraw on the Hudson river in 1854, and was by his parents brought to this city, and in the public school and Bryant & Stratton's business college he received his education. In 1874 he became associated in business with his father, and in 1887 started out independently, his brickworks having now a capacity of seventy-five thousand per day. He is a popular and successful business man, is doing well, financially, and has furnished brick for many of the leading business houses and residences of Chicago. He has been secretary of the Brick Manufacturers' association off and on for the past seventeen years, and at the national convention of brickmakers at Memphis, in 1888, was elected treasurer of the Brick Manufacturers' Association of the United States. In 1884 he was elected assessor of the town, and in 1887 president of the town board of Cicero. He has also been honored with nominations for supervisor of the South Town of Chicago and clerk of the Appellate court of the First district of Illinois. He has associated in business with him two brothers, William McKenna, Jr., and Bernard McKenna. J. J. McKenna and his brothers are residents of Brighton Park, at which place they have built themselves a home. Owing to the increase of the value of the real estate upon which his yards are now located he and his brothers have arranged for an eight-acre tract of land eight miles from the city on which they intend to put up a permanent plant.

Thomas Tully, one of the oldest brick manufacturers of the city, a member of the Brickmakers' association and of the Builders & Traders' exchange ever since its inception, comes of an Irish family, and was born on the Emerald Isle in 1835. At the early age of twelve years he came to the United States, and for a number of years resided in Rochester, N. Y., where he was educated and where he learned the carriage-painting trade. He first set foot in Chicago in 1855, but not liking the appearance of the then inferior looking little town, remained only a short time, removing to Quincy, Ill., where he worked at his trade and made his home until 1858. In the year last mentioned he returned to Chicago and engaged in the grocery business, which he followed successfully until 1872. In addition, however, in 1866, he began manufacturing brick in this city, under the firm name of T. Tully, Jr., & Co., turning out about forty thousand brick per day, and the firm did business until 1875. Meanwhile Mr. Tully established another brickyard in this city, giving his brother, John D. Tully, a one-half interest in the business, the style of this firm being T. & J. D. Tully. This establishment turned out one hundred and fifty thousand to one hundred and sixty thousand brick per day. This partnership continued for a period of ten years, during which time an extensive business was carried on. The firm was dissolved in 1882. Mr. Tully is undoubtedly one of the foremost brick manufacturers of Chicago, and his product has been used in the construction

of many of the handsomest and most imposing structures of which this city can boast. He is a thoroughgoing and practical man of business, is shrewd, yet strictly honorable in his methods, and the confidence and esteem with which he is regarded by the contractors and builders of the city with whom he has very extensive business relations are sufficient proof of his worth and merit. In the period before the fire Mr. Tully supplied one million five hundred thousand bricks for the First National bank building, at the corner of State and Washington streets; about seven hundred thousand for a large hotel at the corner of Madison and Canal streets; and the bricks for the Shoeman packinghouse, besides filling many other large and exceedingly great number of smaller contracts in the city. In 1867 he paid \$8 a day per team for drawing brick. In 1863-4 he furnished bricks for the Illinois Central Railroad Company's manufacturing shops in Cairo, Ill., establishing yards there for the purpose for which he bought machinery in Chicago. He later operated at De Soto, Ill. In September, 1864, he was drafted for service in the army, but hired a substitute in Chicago. His operations about this time were not extensive, but in 1867 he resumed business on a large scale and was an important factor in the brick industry after the great fire, when, among other structures, he furnished brick, in 1871, for a large building at the corner of Lake street and Wabash avenue, Leander McCormick's building on Randolph street, Joseph Bonfield's buildings on Wabash avenue near Van Buren street, and on the corner of State and Van Buren streets. In 1872, while filling a contract for five hundred thousand brick for a brown-stone and brick structure on Wabash avenue, his horses all died of an epidemic, and he was obliged to haul the brick with ox teams. He also furnished material for the courthouse, the Sherman house, the Tremont house, the old and new Board of Trade buildings, and the convent at Wabash avenue and Twenty-ninth street, as well as five to six million brick for the Kankakee insane asylum, and a large amount for buildings at Pullman. Besides his present yards at Thirty-fifth street and Central Park avenue, Mr. Tully is the owner of a large amount of real estate in and about the city. He was married in 1862 to Miss Eleanor M. White, a native of Rochester, N. Y., by whom he has the following children: Ada N., Frances A., Mary A., John W., Julia M., Margaret A., Thomas, Jr., James, Eleanor M. and Elizabeth. Mr. Tully's father, Thomas Tully, was born in Ireland and came to Canada in 1844, and to Chicago in 1854, dying September 11, 1872. He was a farmer by occupation, and a worthy citizen and an honorable man. His wife died in Ireland, when the subject of this sketch was four years of age. The Tully family have been known in Chicago for many years, and naught has ever been said derogatory to their honor. The residence of Thomas Tully is at 3643 Archer avenue.

John F. Whiting, one of the old and well-known brick manufacturers of Chicago, is a native of Athens, N. Y., born in 1839. His father, David Whiting, was also born in Athens in 1809 and died there in 1872, having for forty years manufactured brick, dealt in coal, etc., and gained the reputation of being one of the best brickmakers and most prudent business men in those parts. He was a leading spirit in his community, and was in 1857 elected a member of the legislature for his district, though he ignored politics and believed

no honest man could be a professional politician. His wife was Miss Anna Hardick, also a native of Athens, now a resident of Chicago. Mr. Whiting was educated at the Ballston Spa institute, in New York state, and at Eastman's business college, Poughkeepsie. He may be said to have been reared to the brickmaking business by his father, and in 1865 began manufacturing brick in Chicago, having come to this city in 1863. He made the brick for many of the finest buildings of this city prior to the great fire of 1871, and his present yards are located at Thirty-ninth street and Ashland avenue. He manufactures about five million common brick per annum, his product being of the very finest quality. He does not aspire to do the largest business in the city, but to give the best satisfaction. As a business man he possesses unusual intelligence, ability and prudence, and his business is a substantial and prosperous one. He is a member of the Builders & Traders' exchange, and his residence is at 3568 Grand boulevard. He has traveled quite extensively in different parts of the United States. He was married in 1867 to Miss Mary Lawson, who died in 1888, leaving the following children: Myra A., Robert E., David, Maud M. and Willard. Mr. Whiting's great grandfather was David Whiting, a colonel in the Revolutionary war. His grandmother was a Bradford, and a descendant of General Bradford, the patriot soldier. The graves of Colonel Whiting and General Bradford are at Plymouth Rock, and it seems fitting that these men who helped to rescue the descendants of the Plymouth colony from a bondage equal to that which drove their forefathers from their native land should be buried near the spot where the Pilgrims first pressed foot to American soil.

Henry T. Jones is one of the oldest brick manufacturers in Chicago, and has operated extensive yards at Blue Island avenue and Wood street. He is a native of Chippenham, Wiltshire, England, born March 9, 1823, and was educated in his native country. On the 1st of June, 1837, the year that Queen Victoria's famous reign began, he commenced learning the brickmaker's trade. Having learned the best and most advanced styles and methods of his trade, he worked at the same with much success until 1857, when he came to the United States and located in Chicago. In 1859 he removed to Louisiana, and for three years was employed in the manufacture of brick on various plantations in that state. During that period his employes were negroes only, all of whom he had to teach the trade. This added much to the perplexity and difficulty of his labors there. Had it not been for the war, Mr. Jones, no doubt, would have continued his operations in the South, as his business was lucrative and there was a strong demand for his services. However, he returned to Chicago in 1861, and here he was engaged in the manufacture of the best and most modern grades of brick to be found in the West, until he retired from active business in 1888. He made all the common brick used in the construction of the Palmer house (seven million in number), and furnished fourteen million for the Cook county courthouse, and large quantities for the Commercial and Tremont houses, the Pacific hotel and the McCormick reaper factory, besides numerous other orders fully as large, including all the brick for the Dore block, the Ashland block, the Marshall Field building on State street, the Cook county hospital, the Union depot on Canal street, the Honore block, a Methodist church, a

block at the corner of Washington and Clark streets, elevator B, near the river and lake, and the four blocks on the four corners of West Madison and Halsted streets. He was married, in 1851, to a Miss Jane Jones, of Bath, England, who died in the city of Wilmington, Will county, Ill., in 1871. She left two children. In 1873 Mr. Jones remarried, taking Miss Fannie Goewey as his wife. She died the following year, leaving one child. In 1876 Mr. Jones married Miss Katie Gridley, by whom he has six children. He was made a Mason in 1862, and is a member of Garden City lodge No. 141, and is also a member of Washington chapter of the Chicago commandery No. 19, and of the Oriental consistory. He resides at Crystal Lake, Ill., forty miles from Chicago on the North-Western railroad. He is a member of the Builders & Traders' exchange.

Thomas Moulding, one of the most prominent of the older business men connected with the building interests of Chicago, deals extensively in Chicago hydraulic pressed brick, St. Louis hydraulic pressed brick, Collinsville and Findlay pressed brick, Racine buff pressed brick, and manufactures Chicago common brick, terra cotta wall coping, and chimney coping and chimney tops. He is probably the oldest brick manufacturer in the city, and his terra cotta coping possesses great value in the building arts. It is extremely durable, easily adjusted, and when brought into competition with other styles or materials, finds a ready and extensive sale. His prices are the lowest and his materials the best. He started the manufacture of pressed brick in 1866, and is still actively engaged in the business. His drain tiles are also of the very best quality. He manufactures his brick within the city limits, and has a large patronage here. He was born in Warrington, England, December 13, 1825, and spent the early years of his life there. He worked at the machinist's trade until 1862, at which time he began the manufacture of brick. He has been a member of the Builders & Traders' exchange since its organization, and also belongs to the Brickmakers association, the Sons of Temperance and the Good Templars. He is one of the directors of the Washingtonian Home, and for many years has been a member of its executive committee. With Andrew Paxton he organized the Citizens' league, and is still one of the board of directors and a member of its executive committee. He was married in 1857 to Miss Sarah Watkins, of English birth, by whom he has five children. He and his family are members of the Methodist Episcopal church.

William B. Owen is prominently connected with the building interests of Chicago. He is an extensive manufacturer of brick and terra cotta at Hobart, Ind., and Denver, Colo. He has been a member of the Chicago Builders & Traders' exchange since its organization, and stands very high as a representative man connected with the building interests not only of Chicago but of the West. His office is at room 26 Builders & Traders' exchange building. He was born in Crown Point, N. Y., June 5, 1834, where he grew to manhood and was educated. In 1859 he came West, and in the following year located in Chicago, remaining for one year, working during that period in the Illinois Central round house, and then for two years for the firm of Fuller & Ford, machinists, at the Madison street bridge. Succeeding this he was employed by L. J. Todd, as engineer, and in 1864

engaged in the brick business at Bridgeport, in Kinsley's brickyard. Here he made brick extensively at \$5 per thousand. In 1865 he went to Willow Springs, Ill., and began there the manufacture of pressed brick, shipping a considerable quantity of it to Chicago, and this seems to have been about the first pressed brick in the Chicago market. The Miller pressed brick machines were brought from Philadelphia by Mr. Owen. The first pressed brick made by him was sent to Chicago, where it was used in the construction of Norton's flouring mill. He continued successfully at Willow Springs for four years, and in the fall of 1871 engaged in farming in Champaign county, Ill. In the fall of 1871 he went to Porter Station, at the crossing of the Lake Shore & Michigan Central railway, and has since been engaged there in the manufacture of pressed brick. At that time also he began the same business at Hobart, where he now resides. In 1887 he began the manufacture of terra cotta, in connection with the brick business, and this he also continues. He is one of the leading men in this line in the West, and one of the most reputable and conscientious of Chicago's business men. In the fall of 1890 he established the Denver Terra Cotta Lumber Company, of Denver, Colo. Mr. Owen employs an average of forty men throughout the year. In the vicinity of Hobart, Ind., is some of the best clay for the manufacture of terra cotta to be found in the United States. In the fall of 1890 he shipped two hundred car loads of terra cotta from Hobart to Denver, Colo., which shows the mammoth extent of his business. On his yards at Hobart are several dwellings constructed entirely of this terra cotta, and the results of its use are most satisfactory. Mr. Owen's country house was built of it also. When finished on the exterior with cement or stucco work (though these materials are not generally used as yet), such buildings prove durable and highly satisfactory. The extent to which terra cotta lumber has been used in a comparatively few years past is a true index of its general worth. In Chicago among the buildings in which terra cotta lumber has been used are the following: Auditorium, Owings, Tacoma, Adams Express, Foreman's, the Rookery, Pullman, Phenix, Leiter, Temple Court, old Board of Trade, Jaffray, Chicago & Northwestern Railway, Lobenstein, German Maennerchor, Pierce, Springer, Palace Hotel, Union Stock Yards bank, People's theater, Franklin and Mallers buildings, besides numerous others, private as well as public, throughout the city. Mr. Owen is a Mason, a member of Valparaiso commandery No 28, Knights Templar. He was married, in 1867, in Chicago, to Miss Anna Pride, a native of Scotland, who has presented him with two sons, Leonard and William.

Michael Myers is a successful and extensive manufacturer of brick, and has his spacious yards at Thirty-first and Leavitt streets, and Thirty-third street and Blanchard avenue, where he gives employment to about one hundred and ten men, his office being at 914 Ashland avenue. Although born in Ireland, Mr. Myers has been a resident of the United States ever since the year of his birth (1850), and since 1868 has been a citizen of Chicago, except during 1879 and 1880, when he conducted a brickyard in Kansas City, Mo. He began work in Chicago in the brickyard of Slater & Teghtmyer at the corner of Robey street and Dexter avenue, which place he now owns, and after his return from Missouri he continued the brickmaking

business, and now, during the summer season alone, makes fourteen million brick. He is well known to the builders of this city, and large quantities of his products have found their way into some of Chicago's handsomest and most noted structures. Mr. Myers is essentially a self-made man, is practical in his views, and as a citizen and business man his good name is above reproach. He has been a member of the Builders & Traders' exchange since its organization, is a member of the Catholic order of Foresters, and in his political views is a democrat. In 1876 he was married to Miss Bridget Nolan, who was born in Cook county, Illinois, in 1858, a daughter of Thomas and Mary Nolan, pioneers of Cook county, the former of whom died in 1878. He is the father of three children: Mary, Anna and Martin. Mr. Myers' parents were Martin and Mary Myers, who settled in Virginia after coming to America. The father was drowned in the James river in 1852, and the mother died in New York in 1866.

The Robinson Brick Manufacturing Company's yards are located at Sixteenth and West Forty-fourth streets. Its officers are: T. H. Robinson, president; John C. Kneale, treasurer, and V. A. H. Robinson, secretary. This company was organized and began business in 1887, and has since continued a successful and ever increasing trade. They manufacture what is known as the Chicago common brick, and have capacity for about eighty thousand per day.

A house that in 1887 had been established for more than a quarter of a century, was that of the White Hall Fire Clay works, 282 South Canal street. This business was founded in 1861 by Mr. W. W. Arnold, who conducted it till 1870, when it was duly incorporated with an authorized capital of \$100,000, of which \$75,000 had in 1887 been already paid up. The works were very spacious and comprised several commodious buildings, which were admirably supplied with all modern appliances, apparatus and machinery known to the trade, while employment was given to a strong force of skilled workmen. The company manufactured largely sewer pipe, culvert pipe, drain, tile and fire brick, also stoneware, jugs, jars, milk pans, bean pots, churns, flower pots, etc. These goods were unrivaled for quality, finish and durability. Their fire bricks were general favorites, owing to their reliability and excellence for gas works, rolling mills and cupola purposes, foundries and forges, lime and cement kilns. The company likewise manufactured slabs and tiling for lining ovens, stoves, grates and furnaces. The facilities of this company were unexcelled, and the various processes of grinding, molding, drying, pressing, burning and finishing were are systematized and achieved with the greatest economy of time and labor. The works were finely situated for shipping purposes, the tracks of the Chicago, Burlington & Quincy, and the Chicago & Alton railroads running through the yard. Mr. W. W. Arnold was the president of the company, and Mr. Daniel C. Gordon the agent in this city.

Chicago has become almost a synonym for progress and enterprise. Her merchants, by native ability and practical enterprise, have extended her trade limits until they radiate from her as a center to every portion of the continent; the West, with its already great demand and untold possibilities for the future, has been made measurably dependent on her for most of their supplies, especially in staples. While this obtains in most mercantile branches, her

manufacturers have not neglected the opportunities thus offered, but, pressing to the front, adopting all manifest improvements in facilitating and enhancing the quality of production, have brought Chicago prominently forward as a manufacturing city of the first magnitude. In this connection, we may remark, that the application of scientific principles, aided by mechanical skill, to the improvement of machinery for the production of articles of essential utility, has been one of the features specially marking the age of progress, not only bringing about a radical change or departure from the old methods, facilitating production and materially improving the quality of those products, but by increasing the capacity for manufacturing, sensibly cheapening them. No interest is of more importance to a community than those connected with her building facilities, none conduces more to the improvement and consequent valuation of property, and none exercises an equal influence in attracting capital and population. The more solidity, as well as architectural symmetry, presented by the buildings of a city, the greater the impression produced upon visitors seeking points for the investment of capital and for location. Of late years, especially since the general application of iron and steel to building purposes, Chicago has made rapid strides in architectural construction, her buildings growing more massive and imposing in appearance; but her lack of material formerly confined the resources of her architects to wood and stone, and the latter being a costly material, its use was generally restricted to mere veneering or coating on rough brick. As stated before, brick, which in the eastern cities was considered the most comprehensive and effective material, giving greater solidity, more latitude for ornamental design, style and finish, and withal, in the case of pressed brick, presenting a handsomer appearance and one less bald or glaring than stone or painted wood to the eye, was unobtainable in Chicago, except by expensive importation from the East. This want or necessity, was, at length, fully met by the enterprise of several leading business men, among them those comprising the Chicago Anderson Pressed Brick Company. Recognizing this hiatus in building facilities, Messrs. C.H. Frost & Co. established themselves in the manufacture of pressed brick in 1877, with a capital of \$50,000, working under patents issued to J. C. Anderson, by which method bricks of uniform quality, unusually smooth and of clear surface, excellent texture and bright, beautiful appearance, are made. Offering for the patronage of the public a comparatively new article, their success from the outset was as notable as it was gratifying, and their product rapidly superseded the eastern brick, and won the favor of the architects and builders, and as a consequence, materially improved the appearance of both the residence and business portions of the city, many elegant and ornate buildings having been constructed of these bricks. By their process, covered by some thirty patents, bricks are manufactured in varied shades of red, and they are made in plain shapes, as also in any desired shape, and ornamented in graceful and beautiful designs, artistically wrought and effectively produced. This company, being sole owners of these patents, are the only manufacturers here working under these processes; the only company producing this brick, which they claim, with substantial showing, is superior in many important essentials to any pressed brick made, in either East or West. In 1880 they were incorporated under the state law, with a capital of \$500,000. The follow-

ing well-known business men were chosen officers: Elisha Gray, president; S. R. Bingham, vice president; W. F. Johnson, treasurer; F. L. Blake, secretary; and C. H. Frost, general manager. The following description of their manufacturing facilities was written in 1883: "The works on Elston avenue cover an area of seven acres, on which are situated the necessary buildings and storing sheds. The main building, which was recently burned, and with commendable enterprise immediately rebuilt, has a frontage of two hundred feet by five hundred feet in depth. It is completely equipped with their special machinery and all other requisite appliances, facilities and conveniences, the motive power for driving which is supplied by one Corliss engine of one hundred and fifty horse-power, and one Westinghouse engine of forty horse-power. The building is illuminated by electric lights, enabling them to work at night, which the increasing demand for their product renders necessary; one hundred hands are employed, many of them skilled mechanics with long experience. The capacity of the works is about fifty thousand daily, at the present time sixteen kilns being in use, which product the company contemplates increasing in the near future, to bring the supply up to the demand. Besides their large city trade, their product meets with ready sale from Ohio, throughout the West and Northwest, reaching over \$300,000 annually." Mr. Gray, the first president, was the inventor of telephonic fame. As an industry of the utmost importance, materially aiding in the progress, building up an ornamentation of the city, this is well worthy of record, having been long known as a representative enterprise, ably managed and conducted upon a plane of broad, liberal and honorable policy and legitimate business system and characteristics. The president of the company at this time is James C. Anderson; John C. Cushman is treasurer. The offices are 1015 to 1021 Rookery building.

The Tiffany Pressed Brick Company (office 22, 161 La Salle street) was incorporated in September, 1884, upon a paid-up capital of \$150,000, which has since been increased. The following are the officers: President, J. Van Inwagen, resident of Chicago since 1854; secretary, F. Van Inwagen. Joel Tiffany, the inventor of the celebrated Tiffany refrigerator car, was vice president. The company have large works at Momence, this state, fifty miles south of Chicago, on the Chicago & Eastern Illinois railway, whose side tracks run directly to the works, and the line of production consists of the finest pressedbrick, both plain and ornamental, made by an entirely new method known as the Tiffany process, by which pressed brick, equal if not superior in quality, color and finish to any produced elsewhere, is being manufactured. The company is a Chicago concern, its headquarters being located here, its officers and stockholders being well-known business men of the city. The works employ a large force of skilled artisans. The intrinsic merit of the Tiffany pressed brick has attracted the attention of the leading architects and builders throughout the country, who are unanimous in its commendation.

The following testimonials from representative architects have been given this company. William W. Clay, architect, of Chicago, says: "Since the Tiffany Pressed-Brick Company commenced to supply our market I have used many thousands of their fine pressed bricks, and they have given me great satisfaction. I prefer them to any other red

pressed bricks that I know of. Their compactness of texture and perfection of surface and beauty of color all combine to make them a building material of the highest order." M. L. Beers, architect, of Chicago, says: "I have used the Tiffany pressed brick in several buildings that have been under my supervision as architect, and I am highly pleased with them. I take pleasure in recommending them." Col. Arthur Crooks, architect, of New York, says: "I consider the 'Tiffany' one of the best bricks I have ever examined, and I feel confident that a ready market would be found here for such a perfect material." D. Adler, architect, of Chicago, says: "The Tiffany bricks that I have seen as samples in your office, and in use as facing bricks on many buildings in this city, are so remarkable for regularity of shape, smoothness of finish, firmness and uniformity of texture, and richness of color, that I must recognize them as the equals of any and the superiors of most of the high-grade facing bricks manufactured in this country." The certificate submitted from the Chicago Forge & Bolt Company below shows great strength of material in the Tiffany brick:

CHICAGO, ILL., February 21, 1887.

TIFFANY PRESSED BRICK COMPANY,
175 Dearborn street, Chicago,

GENTLEMEN: The following is result of tests on brick, by express from Momence, Ill.:

MARK.	Ultimate Crushing Strength.
Hard Building.....	402,000 pounds.
No. 12 Stock.....	516,000 pounds.
Ornamental, No. 52.....	480,000 pounds.
No. 50.....	648,000 pounds.

Yours respectfully,

CHICAGO FORGE AND BOLT COMPANY,
C. WEATHERSON, *Superintendent.*

James McGraw, one of the oldest general contractors in Chicago, was born in Lime, Jefferson county, N. Y., February 1, 1827, a son of James and Phoebe (Thompson) McGraw. In 1835, when Mr. McGraw was eight years old, the family removed to Michigan, and in 1839 came to Chicago, where they soon took up their residence on Washington street, near Clinton. In the year last mentioned young McGraw began learning the trade of mason, serving an apprenticeship of four years, during which time he acquired a thorough practical knowledge of every branch of stone and brick masonry. He early began contracting on a small scale, and it may be said of him, as it may be said of few others in Chicago, that he has been a general builder in the city since 1842. During about twenty years of his career he had for a partner Joseph Downey, his son-in-law, a man conspicuous in the later building and engineering interests of Chicago. He has erected buildings of all kinds, and for all purposes, in all parts of the city, among them some of the most prominent in different periods of the city's history. To him and Mr. Downey, by common consent, is ascribed the distinction of having erected the first brick building put up in Chicago after the great fire of 1871, which was a store building on Madison street, near Fifth avenue. Mr. McGraw has lived at 132 West Adams street for thirty-six years, and has, during a period beginning earlier still,

used the lot at the same place for the purposes of his business. He has purchased property 214x62 feet front at 927 West Adams street, where he is building an elegant residence and outbuildings which, exclusive of the land, will cost nearly \$20,000, and to the same place he has recently removed his business headquarters. The only interruption to Mr. McGraw's long and successful business career in Chicago was occasioned by his going to California in 1850, influenced to make the venture by the gold excitement of those days. He made the trip with teams and on foot, and, though he met with no remarkable adventures, experienced the difficulties, dangers and vicissitudes of the historic overland travel of that time. He was moderately successful as a gold seeker, and remembers with some satisfaction the fact that he was, before leaving California, able to assist friends less fortunate than himself. He returned to Chicago in September, 1852, and immediately resumed his building operations, which he has continued uninterruptedly to this day. Mr. McGraw was married November 1, 1848, to Miss Roanna Ormsbee, of Chicago, and has had two daughters—Mrs. Isaac Litchfield and Mrs. Joseph Downey, the last mentioned of whom died in 1873. In politics he is an earnest and consistent Republican, helpful to his party and the best public interests, though he is not, in the ordinary sense, a politician; and it has always been found impossible to prevail upon him to accept any official appointments or nomination. He may justly be regarded as one of Chicago's oldest and most respected self-made men, devoted to the best interests of the city and its people, assisting in all good things, and deservedly honored in all the relations of life, and it has been such as he that have made Chicago the wonderful city it is.

Cornelius Price, the senior member of the firm of C. & A. Price, is a prominent contractor of Chicago. He was born in the city of New York, October 17, 1819, the son of Cornelius and Nancy (Meloy) Price. The father was a native of New Jersey, and died in Lake county, Ill., in 1848, at about the age of fifty-eight years. He was quite an early settler of Illinois, having come to this State in 1836. The mother was born in Albany, N. Y., and died in Lake county, Ill., in 1848, at the age of fifty-two years. Mr. Price is the eldest of five living children. His schooling was acquired in New York, but this was of a limited nature, and has been supplemented by experience and study in maturer years. He came with his parents to Illinois in 1836 (by canal to Buffalo; thence by steamer to Detroit; thence to Chicago by land—his father buying a team, and Mr. Price and his brother walking the entire distance). After living in Chicago for about one year he went to Lake county. In the fall of 1836 he began learning the mason's trade with his father, and continued at the same the most of the time until 1848, working considerably at job work. In 1848 he began contracting in Chicago, under the firm name of C. & W. Price, which firm continued until 1856, at which time he was one of the earliest contractors here, some of the other earlier contractors being A. C. Wood, now living on the west side; Alson Sherman, now at Waukegan; Hamilton Heald, Robert Malcom and Peter Page, now deceased. Mr. Price has been in the contracting business in this city since 1848, and is the oldest builder here. In the spring of 1848 he put up his first building, it being a block of four four-story stores on South Water

street. In 1849 he did a large business, putting up many buildings, and on August 31 of that year he began building the Old Tremont hotel, a brick building of six stories. It was then the largest hotel building west of New York, being 180x160 feet, and the owners were Ira and James Couch. Mr. Priece continued to build extensively until 1860. In the last named year he erected the Sherman house, and after the great fire of 1871 he rebuilt it. In 1857 Mr. A. Priece was admitted to the firm, since which date the firm has been known as C. & A. Priece. The first few years after the great fire they erected a great number of buildings, among which may be mentioned the large Northwestern depot, the Royal Insurance building, the Burlington & Quincy office building; Field, Leiter & Co.'s wholesale house on Madison street, the Reaper block and the Diekey building. Their first year's business after the fire aggregated about \$1,000,000. They have been among the largest builders from that time until the present. Owing to the long experience and extensive business of Mr. Priece in all departments during this important building epoch, he is unquestionably one of the most skillful and capable of the resident builders. During his long and active business career in Chicago, he has seen many gradations of the art of building and the alterations of many of the old schools of architecture. He has always kept abreast with the times, and as styles have changed, facilities improved and materials increased, both in quality and kind, he has adopted new methods and discarded old ones. Therefore, in no respect can it be said that he has become so attached to old business habits and ideas as to become unequal to the task of admitting newer methods and responsibilities. He is not only one of the most capable of the resident builders, but stands very high in citizenship. May 1, 1848, he married Miss Malinda Stoughton. They have six children. From December 17, 1875, to March 1, 1880, Mr. Priece served as South Park commissioner.

Few names have been known longer, better or more widely in connection with the building interests of Chicago than that of George Tapper. Born in England in 1835, Mr. Tapper came to America in 1852, arriving in Chicago May 16, of that year, and he has been connected with the building affairs of the city continuously since that time. He was a member of the firm of Mortimer & Tapper for twenty-five years, until January 1, 1888, when it was dissolved. During the past two years he has had the management of construction and alterations of the Chamber of Commerce building as general superintendent of construction. During his long career Mr. Tapper has been identified with the erection of many of Chicago's largest and most celebrated structures, and has built numerous others of all kinds in all parts of the city. Among the more prominent may be mentioned the Rookery building, the First National bank building, the Montauk National bank building (the first high structure erected in Chicago), the Calumet building, and many churches and other buildings of a public or semi-public character, including the university buildings at Evanston, and the well remembered university buildings of Camp Douglas. Mr. Tapper was one of the originators of the Builders & Traders' exchange, and has been one of its directors three years and its president two years. During the past three years he has been treasurer of the National Association of Builders, and since its organization he has been a delegate to every successive annual convention, held in different large cities throughout the Union.

The family of Mortimer, of which William E. Mortimer and his sons are well known representatives in Chicago, has been identified with the building interests both in England and the United States during four generations. William E. Mortimer's grandfather, Edward Mortimer, was killed in 1815, while yet in the prime of life, by falling from a building for which he was the contractor, in Moreton, Devonshire, England. He left a wife and four children, three of whom were sons, and the eldest of whom, Edward, Jr., was eighteen years of age at the time of his father's demise. Despite his extreme youth and his inexperience in the ways of the world, he at once practically took the place of a father to the family—encouraging, helping and directing them in their efforts toward a subsistence and general worldly advancement. He and his brothers, William and John, all became masons and came with their families to this country. William E. Mortimer, son of William and Mary (Germon) Mortimer, was born in North Bovey, Devonshire, England, June 17, 1828. He learned the trade of mason from his father and uncle, and worked with them until late in his twenty-first year. About the first of April, 1849, Mr. Mortimer decided to emigrate to America and secure the advancement of his fortune in that young and growing country, and on the 11th of that month he sailed from England on the ship *Delia* and landed at Quebec after a rough and tempestuous voyage of seven weeks and four days. After remaining in that city for a few days, he went to Montreal and thence to Toronto by boat, arriving at the latter place on June 15. It was his intention to go from Toronto to Fort Stanley, Canada West, but before the time of his contemplated departure arrived he made the acquaintance of a young second lieutenant in the United States army stationed at the St. Louis barracks, but at that time temporarily in Canada. This officer, when he heard where Mr. Mortimer was going to seek a new home, assured the latter that he was making a great mistake and advised him by all means to go to Chicago, as that place was certain to become a big city some day. After giving the matter some serious consideration, Mr. Mortimer decided, on his twenty-first birthday, June 17, 1849, to act upon this advice. The next day in company with his friendly adviser he left for Buffalo and was in the United States on the night of the 18th. He arrived in Chicago on the 22d. He spent two years in the service of Robert Malcolm, learning brick masonry, having previously acquired a knowledge of stone masonry. He was a mason contractor from 1852 to 1855. In 1855 he formed a copartnership with N. P. Loberg and the firm of Mortimer & Loberg continued until 1859. This firm built several business blocks, some of which were among the most prominent of the city at that time. From 1859 to 1864 he again operated alone as a mason contractor, and in 1864 the firm of Mortimer, Loberg & Co. was formed, his partners having been Mr. Loberg, mentioned above, and George Tapper. They built the Chicago university and other large structures. Mr. Loberg retired from the firm in 1866, and the firm of Mortimer & Tapper existed until dissolved by mutual consent in 1888. In 1866 they built the Michigan Southern depot; in 1867 the Northwestern university at Evanston; and in 1871 the Grand Pacific hotel. Immediately after the great fire of 1871 their business was very extensive. They built the Kendall block on Washington and Dearborn streets, one of the first and

most prominent structures erected in the burnt district. They rebuilt the Michigan Southern depot and the Grand Pacific hotel and erected other large structures of all kinds in different parts of the city. They built some of the finest of Chicago's churches, among which are the Union Park Congregational, the Third Presbyterian and Grace Episcopal. Among the notable business buildings which they erected may be mentioned the First National bank building, the Commercial bank building, the Montauk block, the Grannis block, the Calumet building, the Home Insurance building and the Rookery. In the spring of 1888 the firm of William E. Mortimer & Son was formed, which erected a number of important buildings of different kinds. In 1890 Mr. Mortimer retired, and the business passed into the hands of his sons, William H. and Charles J., known as Mortimer Brothers. Mr. Mortimer was married November 22, 1853, to Miss Mary J. Linton, a native of Somerset, England, who has borne him seven children: William H., Matilda J., Eva (deceased), Ida May, Charles J., Frank G. and Laura B. He is a member of the Illinois club and of Ashlar lodge No. 308, A. F. & A. M., Corinthian chapter No. 69, R. A. M.; Chicago commandery No. 19, Knights Templar and Oriental consistory, S. P. R. S., thirty-second degree. William H. Mortimer, of the well-known and highly successful contracting and building firm of Mortimer Brothers, 72, 187 La Salle street, is a Chicagoan by birth and residence. He was born June 19, 1859, and upon reaching a suitable age was placed in the public schools of this city; he also attended private schools, and for some three years was in the Galt Collegiate Institute of Galt, Canada. He was apprenticed to learn the mason and builders' trade to Mortimer & Tapper in 1874, and was employed by them until 1880, when he acquired an interest in the firm which he retained until its dissolution, when the firm of W. E. Mortimer & Son was formed, William H. being the junior member, until the firm of Mortimer Bros. came into existence. Mr. Mortimer is a practical business man and is a member and vice president of the Builders & Traders' exchange. He also belongs to the Masonic fraternity, the Royal league and the Illinois club. He was married in 1881 to Miss Grace Lee Osborne, a native of Chicago, by whom he has one son and one daughter: A. Osborne, aged nine years and Elsie M., aged seven years. Charles J. Mortimer, junior member of the firm of Mortimer Bros., is a native of Cook county, his birth having occurred in 1868. He was reared in Chicago, was educated in the public schools of the city, and completed his knowledge of books in Lombard university at Galesburg, Ill. After this he began learning his trade with his father and brother William H., and was afterward made a partner in the firm of W. E. Mortimer & Son, in 1889, and remained thus associated until June, 1890, when the partnership was dissolved and the firm became Mortimer Brothers. This firm has since been very prominently identified with the building interests of this city, having erected an eight-story building for A. J. Stone, at West Madison street and Ogden avenue, a building for the Heywood & Morrill Rattan Company, a foundry for the Gates Iron works, a packing and cold storage building for Underwood & Co., additional stories to the Grand Pacific hotel, a six-story-flat building for the trustees of St. Luke's hospital on Michigan boulevard and a number of other structures. As contractors and builders, Mortimer Brothers have become well

and favorably known throughout the city, and the work which they have completed shows that they are adept workmen and conscientious in discharging their obligations. W. E. Mortimer, upon retiring from the firm, was one of the oldest mason contractors in the city, and he is an honorary member of the Builders & Traders' exchange.

John G. Dietz is one of the oldest masons in the city, and is prominently connected with the building interests. He was born in Bavaria, Germany, in 1827, and ten years later was brought to the United States by his parents, who settled in Cleveland, Ohio. In 1846 he began to learn the mason's trade in Cleveland, and two years later made a visit to Chicago by boat around the lakes. The following year he located here permanently. Since 1854 he has been a mason contractor, and during this long period has constructed a large number of buildings in Chicago and suburbs. He has been a member of the Builders & Traders' exchange since its organization, and is also a member of the Masons & Builders' association. He was married in 1854 to Miss Rachel G. Turek, a native of the state of New York, and by her had four children—one daughter and three sons, namely: Celia Josephine, George F., Henry L. and Albert. The daughter died when nine years of age. He lives at 1501 Wrightwood avenue. The first work he did in the city was for Messrs. C. & W. Price, in 1849, on the Tremont house.

E. Earnshaw, of the firm of E. Earnshaw & Son, masons, contractors and builders, Builders & Traders' exchange, was born near Huddersfield, Yorkshire, England, in 1826. He is descended from a family of builders, and was early trained in the same business. He located in Chicago in 1857, at the age of about thirty, and has since been prominently connected with its building interests. His first work was in connection with the cut stone industry. After the fire he engaged in the building business, and rebuilt most of the bridges that had been destroyed in the great conflagration. He also built the west side water works and had full control of the erection of the crib (then in company with E. F. Gobel). Since establishing business, in 1865, on his own account, Mr. Earnshaw has developed a large and permanent connection of a strictly first-class character among the leading architects and property owners, for whom he has erected many of the substantial business blocks and elegant private residences which adorn the garden city. He is still in the prime of life and a hard worker, with well-organized forces and facilities for the prompt completion of any contract undertaken. A close-figurer and an active competitor for business, he has made it a practice from the very outset to decline contracts at prices which would compel him to do inferior work. On the contrary, having a reputation to sustain and relying on the merits of past work to secure continued favorable recognition, he has always been ready and willing to enter into contracts of any magnitude provided in every case prices would justify good work. The business of the firm thus stands upon the solid basis of commercial integrity, and is typical of the building interests of Chicago, large, substantial, and full of promise for the future. The firm consists of E. and Charles Earnshaw, and is known under the style of E. Earnshaw & Son. Among the buildings in the erection of which Mr. Earnshaw and E. Earnshaw & Son have been connected may be mentioned the following: The Ontario flats;

the Ryerson building, St. Luke's hospital, the Rosenfield block, and later structures of different kinds. Mr. Earnshaw has been a member of the Masonic fraternity for many years. He and his family are supporters of Professor Swing's church. Mr. Earnshaw was married in England, in 1850, to Miss Mary Brook. They have two children: Charles and Emily (Mrs. Byron F. Busher). Mr. Earnshaw is a member of the Builders & Traders' exchange and president of the Master Masons' association.

T. E. Courtney is one of the most successful mason contractors and one of the oldest builders of Chicago. He is a native of Ireland, born December 5, 1832, the son of Edmond and Ellen (Handly) Courtney, natives also of Ireland. The family emigrated to the United States in 1847, and five years later removed to Chicago, where the father died June 1, 1889, aged eighty-four years, the mother having preceded him about six months. T. E. Courtney received a fair education, and in 1853 began an apprenticeship of three years at the mason's trade, under the supervision of Heald & Waterhouse. He remained with them for four years and in 1857 felt himself sufficiently qualified to begin contracting on his own responsibility, and this he has continued successfully until the present, erecting many buildings in all parts of the north, west and south sides of Chicago, among them being the McCormick hall, the Washingtonian home; German National bank; the Fuller block; the bank structure where the new Herald block is now being erected; the Cook county insane asylum (in 1869); the Institution for feeble minded children at Lincoln, Ill. (1875-8); the shops and round house for the Burlington & Quincy road at Burlington (1881-2); the shops for the Pennsylvania company at Fifty-fifth street in this city (1880-1); the Conduit Pumping works at Fullerton avenue; the foundations for the pumping works at Twenty-second street and Ashland avenue; blocks for Chief Justice Fuller, Judge Shephard, Judge Altgeld, Gen. W. C. Newberry, Henry Greenebaum, F. H. Winston and J. K. Botsford; the Hibernian bank building; the Hawley block; the Havlin theater building; the Gilmore flats, Thirty-seventh street and Lake avenue; several city fire engine houses; some ten school buildings, including the high school at Englewood and the school at Park side, Hyde Park. He did work for the Wisconsin Central road to the extent of \$47,000, and has also erected many other buildings which evince a high degree of intelligence, faithfulness to detail, and skillful manipulation of materials. In 1872 so great was the call upon his services that he had to employ four hundred men and laid fifteen million bricks. This, it will be remembered, was immediately succeeding the great fire. He was chairman of the first nominating committee of the Builders & Traders' exchange, of which he is now a member, and also belongs to the Master Masons' association, and a member of Blair lodge No. 393 of the A. F. & A. M., and the famous Iroquois club of Chicago. He was married in 1859 to Miss Sarah E. Thomas, who was born in New York city, December 25, 1835. They have four children: Julia, Ida, Thomas and Mabel. Mr. Courtney may be truly called an old Chicagoan. He joined the volunteer fire department in 1853, and served almost seven years as an active member of that historic organization. For thirty-seven years he has been a member of the Benevolent association, and of its board of trustees twenty-five years, and he was president of the same



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eleven years and is now serving in the same capacity. He has been prominent and active in political matters, his affiliations being democratic, and has been a member of the city and county central committees several years and has served as chairman of the city central committee, while for six years he was a member of the state central committee.

At about the age of fourteen years Thomas Keating, in his native country, Ireland, began serving an apprenticeship at the mason's trade, under the instruction and supervision of his father, Matthew Keating, a prominent mason and contractor. The father died at about the age of sixty-three. Thomas Keating was born April 19, 1852, and at a suitable age attended school for a short time, but was soon obliged to begin work. The principal part of his education has been acquired from a practical contact with the ups and downs of life. In 1852 he came to America, locating first in New York city, where he remained until 1856, and went thence to Hartford, Conn., and later in the same year came to Chicago, which has since been his home and the scene of his successful labors. His residence is at 197 South Center avenue. From 1856 to 1864 he worked as a journeyman mason, but since that date he has been doing business on his individual responsibility, and is now recognized as one of the steadiest, most reliable and upright of the old contractors and builders here. Among the many structures erected by him are the Times building and the J. H. Clough flats, which may be referred to specially. He was superintendent of the construction of the magnificent Story palace, on Grand boulevard, which is unquestionably one of the largest and most conspicuous residences in the United States, and dozens of other smaller buildings throughout the city have been constructed by Mr. Keating during the twenty-five years of his business career in Chicago. His age, experience, industry, general ability and capacity for business and his unquestioned integrity fit him in an eminent degree for the trying responsibilities of his calling. All who know him readily trust him. He has been a member of the Builders & Traders' exchange for seven years. He is a strong republican, and admires, in a high degree, the splendid Americanism of James G. Blaine. He is also a member of the Royal Arcanum.

Among the solidly built and handsome structures for which Chicago is so justly famous, and which are eminently worthy of mention, are those erected by Leach & Son, which firm is composed of L. L. Leach and his son T. A. Leach. Their progress as builders has been rapid and brilliant, and in the erection of their buildings no material is used that is not admirably fitted for strength, durability and symmetry. L. L. Leach learned his trade in New York and immediately established himself in Chicago after the close of the war, having, prior to this, however, contracted in a small way in New York and Cairo, Ill. Since taking up his abode in this city, he has been prominently identified with the building interests of the West, and some of the handsomest and most durable of the brick and stone buildings of Chicago, as well as many in neighboring cities, were erected by him. No other attestation herein of his ability and skill as a mechanic or builder is necessary except a bare mention of some of the magnificent structures that have been erected by him: First Presbyterian church, Jewish synagogue, Walker's building (the old Bardeck house) at the corner of Wabash avenue and Adams street, Burt's European hotel, the United States Appraiser's stores at the corner

of Sherman and Harrison streets, the Fourteenth street pumping station at Fourteenth street and Indiana avenue, besides other buildings equally substantial. In 1887 his son became associated with him in business, and as he learned his trade under his father, he is a master workman, shrewd, intelligent, far-seeing and decidedly practical. L. L. Leach has been one of the leading builders of the city for the past quarter of a century and it may truthfully be said that the buildings erected by him during this period have stood the test of time and yet stand to his credit, admirably illustrating the thoroughness of his work and his knowledge of his art. He was born in Ontario county, N. Y., December 31, 1836, his parents being Ichabod and Maria (Wheeler) Leach. His early education was such as could be obtained in the common schools, and in his native state he also learned the details of his trade. His son was born in 1859.

Francis Agnew, of the firm of Agnew & Co., was born in Dundee, Scotland, in 1837. His father, John Agnew, was a native of county Armagh, Ireland, but for many years was a prosperous merchant in Dundee, where he died in 1868. His mother was formerly Dorothea O'Connor. She died in Scotland in 1873. He arrived in Chicago in 1851, and in September of the same year began to learn the brickmason's trade, in the employ of Charles O'Connor. At the expiration of two years he engaged with Mr. Milliner, and after following his trade in a variety of positions, but with steadily increasing success, until 1865, he began mason contracting on his own account as one of the firm of A. Fitzgerald & Agnew. This partnership was dissolved by the death of Mr. Fitzgerald in 1869, after which and until late in the fall of 1871, Mr. Agnew conducted the business alone. Immediately after the great fire he formed a partnership with John McDermott, who unfortunately died within two years. In 1874 Mr. Agnew, who had previously taken considerable interest in politics, was elected sheriff of Cook county by the people's party, defeating Mr. Bradley, the republican nominee, by eight thousand majority. After his term of service had expired, he again became active in contracting, his business daily increasing, until it became more than of ordinary importance in upbuilding our city. About this time he was appointed superintendent of construction of the City hall by Mayor Harrison. In 1880 Mr. Agnew again entered into a contract of partnership with Mr. B. A. Cox, his brother-in-law, and for the following ten years they did a very extensive business, particularly at Pullman, where they built many beautiful residences, schoolhouses, stores and other structures. In 1883 they were awarded the contract for building the West hotel at Minneapolis, and the next year saw them constructing the Ryan hotel at St. Paul. They also erected the New York Life Insurance building, the Globe building, the Endicott building and Arcade, the Ryan hotel annex, and many others of similar importance in St. Paul, the postoffice and New York Life Insurance building of Minneapolis, the Board of Trade, the Exchange bank and the Spaulding hotel of Duluth, and many other large structures. Hennessey Brothers were associated with Agnew & Cox for a few years. Agnew & Co., consisting of Francis Agnew, John P. Agnew and John McGillen, have erected the Opera house, Masonic temple and many store buildings in Duluth. Agnew & Co. were awarded the contract for the carpentry and iron work of the building of Manufactures and

Liberal Arts by the commissioners of the Columbian exposition, the contract price being \$450,892. Mr. Francis Agnew is unquestionably one of the most eminent general contractors of the West. He is wholly self-made; he is one of the best producers of this remarkable epoch of development in the constructive arts, and his work alone, in St. Paul, Minneapolis and Duluth, stamps him as a man of enormous energy, boundless resources and superior intelligence. In 1860 Mr. Agnew was married to Miss Ellen O'Neil. The result of this union was eight children. All are now living except Charles, the last born. They are named as follows: John P., Francis, Jr., Maria, Nellie, Michael J., Thomas and Edward. The high esteem in which Mr. Agnew is held, both as regards ability and commercial integrity, is the greatest reward he could wish for, after a life of thorough research, study and honesty.

With rapid and steady advance of the city of Chicago, with the continual increase in her building operations, the calling of the brickmason requires years of assiduous labor and practical experience, and these requisites are possessed in a marked degree by August Eich, evidences of whose handiwork are to be seen in many parts of the city. The buildings erected are of the most substantial make, and he is an expeditious and conscientious workman, being very rigid in the fulfillment of his contracts. Among the many fine buildings that were erected by him, the following are specially worthy of mention: The Maas & Baer's hall, at the corner of Milwaukee and Chicago avenues; a residence for Dammans, No. 1198 Milwaukee avenue; Henry Coop's residence, 962 Milwaukee avenue; a large double house for Young, 928 Milwaukee; Schlitz Brewery Company's building, No. 1030 Milwaukee avenue; a residence for Luebs, on Fry street; a residence for Kaifer, No. 658 North Paulina street; a residence for W. Alexander, No. 170 Augusta street; a residence for B. Gegenheimer, No. 23 Cornell street; a residence for Adam Ochs, No. 709 Hoyne avenue; a residence for Backofen, No. 333 North avenue; a residence for Thompson, No. 128 Curtis street; a residence for Johansen, 306 Ohio street; a residence for J. Schmatal, 860 Division street; a residence for Hoeft, 303 Wabansia avenue; a residence for A. Schroeder, 58 Frankfort street; a residence for F. Roll, No. 18 Werder street; W. Johnson's residence, No. 486 and 488 Chicago avenue, not to mention many other fine structures that testify to his skill and knowledge of his trade. Mr. Eich was born in Germany, September 3, 1846, and was given there a good practical education, which well fitted him for the stirring life he has led. He served a five years' apprenticeship at his trade in his native land, and has followed it since arriving in this country and city, in 1866, the success which has attended his efforts being fully merited. Since the great fire, he has been employed in erecting buildings on the same ground where he did a like work prior to that conflagration. In 1873 he was married to Miss Anna Tischer, of Wisconsin, by whom he has six children. He is a member of the Builders & Traders' exchange, and belongs to the K. & L. of H., in which order he is a trustee of his lodge. He and his family are members of the German Lutheran church, and have a pleasant and comfortable home at No. 32 Will street, which cost \$9,000.

John B. Rogers is one of the leading and progressive business men of Chicago, and belongs

to that old and well-known firm of Rogers & Koch, mason builders, who established themselves in business in this city in 1865. Some of the buildings which they have erected and which redound to their credit are the Cribben, Sexton & Co. plant, on North Erie street; Clement & Sayer's building, on Milwaukee avenue; the plant of A. P. Johnson & Co., on North Green street; the Gramer & Koenig factory, on Pratt, near Green street; F. A. Winter's plant, on West Fourteenth street, near Canal; Horn Brothers' factory, on Superior street; a large factory belonging to Wolff & Brother, on Erie street, besides many others, too numerous to mention. In all, they have erected over five hundred of the best and most substantially built buildings of which the city of Chicago can boast and their work has, in all cases, been highly satisfactory and of which they may well be proud. Among the numerous handsome buildings which stand as monuments to their skill and which are eminently worthy of mention are the following: The residence of J. C. McMullin, superintendent of the Chicago, Alton & St. Louis railway; the residence and a block of flats on Robey street, belonging to Martin Schultz; the building on Washington street, near the tunnel, belonging to Misch & Brother, which was said to be one of the finest buildings erected for many years after the great fire, and A. E. Leight's residence, on the north side. Mr. Rogers has been a member of the Builders & Traders' exchange since its organization. He was born in Birmingham, England, March 12, 1840, but has been a resident of Chicago since 1852, coming hither from Brooklyn, N. Y., his residence in the United States dating from 1851. He was married in this city to Miss Mary E. Long, and has two children: Fannie and Lulu. He has a pleasant and comfortable residence at 481 Fulton street, and is in the enjoyment of an ample competency. Mr. Rogers is a staunch republican in his political views. His parents were James W. and Fanny (Tryphene) Rogers, and both died at 608 West Madison street, the former, who was a carpenter and joiner, in 1860, and the latter in 1878.

George C. Prussing was born at Lubeck, Germany, January 9, 1846, a son of Ernst and Marie Prussing. The failure of the revolutionary movement of 1848 and 1849 drove Ernst Prussing to our shores. After his mother's death the subject of this notice remained with his grandparents, attending school until 1857, when he was called to America by his father, who had in the meantime married again and established a home in Chicago. With the English language to acquire, young Prussing's two and a half years' attendance at the public schools of this city afforded him but slight educational advantages. In the spring of 1860 he was apprenticed to the trade of stonemason and bricklayer, with the firm of Wallbaum & Baumann, and was so employed during the summer seasons of the three succeeding years, working in the winters in the office of Edward Burling, the architect. In 1863 he worked in Chicago as a journeyman bricklayer, and in the winter at plastering. In the spring of 1864 he went to Philadelphia to learn the laying of front pressed brick, then not made in Chicago, and known here only by name. After acquiring proficiency in that branch he traveled as a journeyman bricklayer through the cities of the North in 1864 and 1866, returning to Chicago in the fall of the last-mentioned year. In the meantime he had made his winters useful by studying and reading in public libraries. In 1866 he attended a course



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of Bryant & Stratton's commercial college, paying special attention to banking and commercial law. He took charge of buildings in Chicago for R. E. Moss, during 1867, and formed a partnership with Charles G. Muller, January 1, 1868. Messrs. Prussing & Muller earned and received the confidence of architects immediately after launching out, and were satisfactorily successful, so that in the spring of 1870, by mutual understanding, it was resolved that each of the members of the young firm, neither of whom was then married, should spend a year in European travel, while the other attended to their mutual interests in Chicago. In pursuance of this arrangement Mr. Prussing went abroad in May, 1870, and spent thirteen months visiting the prominent centers of population in England, Ireland, France, the Netherlands, Germany, Denmark, Austria, Italy and Hungary, returning to Chicago in July, 1871. The great fire of October, 1871, occurred only sixty days after Mr. Muller had left for Europe, and his tour was cut short by the necessity of rebuilding Chicago. All of the buildings under contract at the time of the fire (just nine), in various stages of construction, were destroyed, and the firm was suddenly worth in reality many thousands of dollars less than nothing, and its capital consisted in an established commercial credit, the reputation of its members for probity and thorough mechanical training and confidence of their fellow-citizens only. The complicated question as to the settlement of interests between builder and owner under contracts existing at the time of the fire were all adjusted without recourse to a court of law or equity, and the firm resumed operation with a practically clean slate. For the next three years the firm was more than busy, erecting at that time a large number of prominent residences and business blocks of new Chicago. As an instance of the rapidity and magnitude of its building operations at that period, it may be stated that the firm erected at one time all the buildings fronting on Dearborn street, between Randolph and Washington, belonging to seven different owners, from designs by three different architects, and at the same time erecting another building in the same block fronting on Clark street.

In the fall of 1873 Mr. Prussing took time to get married. His bride was Miss Bertha Miller, daughter of Bernhard Miller. They started upon what was planned to be an extended wedding trip. When they were scarcely a week gone, the panic of 1873 swept over the country. Either the foresight or good luck of Mr. Prussing, which had prompted him to line his pockets with currency on the eve of departure, enabled him to carry out his plans to the letter without running against closed doors of banking houses en tour. In 1875 the firm of Prussing & Muller was dissolved by mutual consent. Edward Burling had been appointed superintendent of construction of the Chicago custom house and postoffice and offered employment to Mr. Prussing as inspector of materials, which the latter accepted. In the following spring Mr. Prussing was appointed assistant superintendent of construction, in charge of stonecutting, by the secretary of the treasury, and served in that capacity until the completion of the cut-stone work. In 1880 Mr. Prussing resumed his business, and has carried it on since that time, and while never figuring in open competition, he has been entrusted with and has erected many important buildings for people who have set more value on mechanical excellence than on the few dollars' necessary extra cost to secure it. For the last five years

he has been employed frequently as an expert in building affairs by insurance companies, in arbitrations, in subdivisions of large estates, and by attorneys in condemnation proceedings. In 1881 Mr. Prussing became interested financially in the Purington-Kimbell Brick Company, and devoted a large portion of his time to overcoming the prejudice that formerly existed in the minds of the architects, builders and owners against machine-made brick, serving as treasurer of said company. When this task was accomplished, it was no longer necessary that Mr. Prussing should be active in the management of the affairs of this concern, and he has since served as its vice president and director. For a long time Mr. Prussing has been active and earnest in his efforts for the common good and the advancement of his fellow-citizens. He has long been one of the most efficient promoters and supporters of the Chicago Mechanics' institute, of which he has been president since 1876. He was one of the projectors and the chief organizer of the Chicago Masons & Builders' association. He called its first meeting to order and was active as its director and president. He resigned his membership in 1890, and in appreciation of services rendered he was elected an honorary member, thus far the only one of that class. He was one of the incorporators, and for the first three years president of the Chicago Builders & Traders' exchange, and since then one of its most helpful members, officers and advisers. During the last ten years misunderstandings and troubles have arisen between employers and workmen. Prompted by his conviction that all such troubles should be adjusted, and strikes and lockouts prevented in future by arbitration, he consented to serve as secretary of the Masons & Builders' association in 1883. At that time employers and employes dwelt in hostile camps, each class endeavoring to coerce and dictate to the other, and a long contested strike was the result. Through Mr. Prussing's efforts, finally a committee was appointed by each organization without instructions and clothed with full power to act, and a settlement was perfected. Through the lack of intelligence of the labor organization, the settlement effected in committee (and which would have laid the foundation for a future better understanding between employers and employes, by organizing a permanent committee of arbitration), was not approved and fell to the ground. The strike continued until, one by one, laborers resumed work and the union was practically beaten. During four years it recruited its strength and again, in 1877, indulged in arbitrary dictation to employers and resolved on a strike. Mr. Prussing's plan in the crisis, which involved a board of arbitration consisting of five members and an umpire chosen by the members, was entirely successful, and has since been the pattern for all similar organizations. It attracted such widespread attention that the resident German minister was advised by his government to report details. A correspondence regarding the same subject was begun with Mr. Prussing by Australian authorities. Associations of builders having been formed in the larger cities of the country, they were requested to send a representative to Boston for consultation upon the question of forming a national organization. The National Association of Builders of the United States of America was the result of this conference, and its first convention was called to meet in Chicago, March 20, 1887, with Mr. Prussing as president in the chair. In calling the convention to order Mr. Prussing made the following brief address:



Jos. Downey

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“Gentlemen of the Convention—As a citizen of Chicago, and one of the representatives of its Builders & Traders’ exchange, I bid you welcome to our city; welcome at all times, but thrice welcome now, in your capacity of delegates to this convention. You have been sent here to lay a foundation for an edifice which, when completed, will bear witness, we trust, to the business tact and wisdom of its founders, and be of benefit to all, not only to those whom we may directly help, the builders, but also to the mechanics and laborers engaged in the various building trades, and in the shaping and preparation of building materials; and if such be the result of your deliberations, who will say that it is not of use and benefit to the general public as well? Everybody is, or expects to be, a builder at some time of their lives, and the result of your labors will affect all, directly or indirectly, immediately or remotely. Again, gentlemen, I bid you welcome; may your stay be pleasant, so that hereafter you will look back with pleasure to the first builders’ convention at Chicago.” The records show that Mr. Prussing took a prominent and helpful part in the deliberations of the convention, and he is credited with the principal authorship of an able pamphlet on building contracts prepared by the Chicago Masons & Builders’ association and published as part of the official report of the national convention of 1887. At the second annual convention, held at Cincinnati, Ohio, February 7, 8 and 9, 1888, Mr. Prussing was a member of the committee, on statistics and of the committee on uniform contract, while serving as delegate at large from the Chicago Builders & Traders’ exchange. In behalf of the committee on statistics he submitted an able report which embraced an interesting history of the labor troubles in Chicago in 1877. In the debate on uniform contract he took a leading and influential part, and the same fact may be emphasized in connection with the debate on permanent arbitration. In both of these questions Mr. Prussing had long been deeply and actively interested. At the third annual convention, held at Philadelphia, February 12, 13 and 14, 1889, Mr. Prussing also represented the Chicago Builders & Traders’ exchange, as a member of the committee on uniform contract. At the fourth annual convention held at St. Paul, Minn., January 27, 28 and 29, 1890, Mr. Prussing again represented Chicago, and was a member of the committees on arbitration, uniform contracts, and the Builders’ Surety Company, and advocated the abrogation of all live laws as far as they relate to builders. He has been a director of the National association since its organization. As a private citizen Mr. Prussing is enterprising in the highest degree, and has an uncommonly deep interest in the public weal. He is outspoken on all questions affecting the general good, and so thoroughly and energetically does he act upon his convictions of right and wrong that no one is ever in any doubt as to his attitude where there is a division of sentiment. As a member of the Union League he is well and widely known.

One of the residents of Chicago who has demonstrated beyond the reach of controversy the truth of the adage that perseverance and pluck, when united to unswerving integrity, are bound to succeed, is the well known contractor and builder, Joseph Downey. He is a self-made man in the truest and best sense of the phrase, and yet is absolutely devoid of the egotism which is so often apparent in those who have been the architects of

their own fortunes. He was born in Birr, Kings county, Ireland, April 23, 1849. Both his father and grandfather were noted builders in their time, having together laid the foundation and erected the observatory for the famous Ross telescope, one of the largest in the world, and having also erected the castle of Lord Ross, from whose liberality the famous telescope takes its name. Mr. Downey's father died when he was but five years old. Immediately thereafter his mother came to America, bringing her three children, Joseph, Thomas and Mary. She first settled in Cincinnati, where she purchased a home; but owing to a desire to be near friends who were living in Chicago, she disposed of her property in Cincinnati a year or two later and removed to this city. Joseph received his education in the Chicago public schools, and in his twenty-first year began the acquisition of his trade with James McGraw. In 1874 Mr. McGraw took him into partnership, and his keen perception and untiring energy soon justified the wisdom of Mr. McGraw's selection. It is worthy of remark in this connection that while foreman for Mr. McGraw, Mr. Downey laid the foundation of the first building erected in Chicago after the great fire, on Madison street, about fifty feet west of Fifth avenue, the ground at that time being so hot as to burn the boots of the workmen. He has erected many of the buildings which have gained for Chicago her reputation for beauty and solidity of architecture. Among these may be mentioned the Columbia, Criterion and Lyceum theaters; the Union depot at Fourth avenue and Polk street, the Minnesota block, the Franklin public school building, and many of the handsomest private residences in the city. The contract for the building of the Columbia theater required its completion in eighty-seven days under a penalty of a forfeiture of \$200 for each day's delay. It affords an illustration of Mr. Downey's energy to add that it was completed on time. He was the builder of the Cook county poorhouse; the large and handsome Union depot at Hannibal, Mo.; an addition four hundred feet long to the Missouri insane hospital at St. Joseph; the Indianapolis (Ind.) Union depot complete in all details and costing \$700,000; and half a mile of freight depot for the Chicago, Rock Island & Pacific Railroad Company. He is now building, for the United States government, barracks at Fort Sheridan, five hundred feet long. A million-dollar contract upon which he is now engaged is the Van Buren street tunnel for the West Chicago Railroad Company. This will be one thousand five hundred and thirteen feet in length, with an arch 30x22 feet, the largest of its class in the world. Mr. Downey's success has been truly remarkable. He started in life without capital, and while yet a young man acquired a handsome competence, having always paid one hundred cents on the dollar and honorably fulfilled every contract he has undertaken. In 1883 he severed his partnership with Mr. McGraw and has since been alone. He was president of the Masons & Builders' association in 1884, in whose work he evinced great interest. He is one of the oldest members of the Builders & Traders' exchange of Chicago, and has been its treasurer most of the time since it was established. He was elected to the presidency of this association at its last annual election and is the present incumbent of that office. He was married December 7, 1871, to Miss Clara McGraw, daughter of his former employer and partner. Her death occurred in 1883, and on May 5, 1885, he married

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Eng^d by Henry Taylor Jr. for
The Goodspeed Pub. Co. Chicago.

George W. Perkins

Miss Leona Klein, of this city. He finds time from his business to give considerable attention to his fine stock farm, upon which he is quite extensively engaged in breeding blooded horses.

George Messersmith, mason contractor, has his office at room 51, 162 Washington street, and has been identified prominently with the building interests of Chicago for more than twenty years. The following fine buildings stand as monuments to his skill, ability and enterprise: McCoy's hotel, administration building of the Cook county hospital, Western Electric Company's building, Fowler's hall for the Theological seminary of the Northwest at Fullerton avenue and Halsted street, besides many other larger and more important structures outside of Chicago.

E. Sturtevant is one of the ablest and best known contractors of Chicago, where he has built up an excellent trade and an enviable reputation, and is well known to the building fraternity. He came here in 1867, and for a short time at first accepted a clerkship in the store of Field & Leiter, but soon resumed his trade, and after a short time was given an important position of foreman, which he held until about 1870, when he began contracting extensively on his own account. This he has continued with steadily-increasing success until the present time. He was first located at 126 Dearborn street, but is now at 701 Rookery building. He has constructed substantial and beautiful buildings, among which are the new Board of Trade, Phoenix building, the new Herald block and the Post building, besides several others as large and difficult. He has done very large contracting in the line of elegant and beautiful residences. Perhaps no other contractor of the city has excelled him either in character or extent of work performed. He stands deservedly high among owners and architects, and has the absolute confidence of all the better contractors here. He is a member of the Builders & Traders' exchange. He was married in 1873 to Miss Jennie R. Whitman, of Chicago, who has presented him with three children. He is a member of the Masonic order, and holds a pew in the Unitarian church. He was born in Oneida county, N. Y., July 5, 1841, and is the son of Z. B. and Jane A. Sturtevant, natives of Vermont and New York respectively. The father was born in 1806 and the mother in 1821. In 1854 the family removed to Delevan, Wis.; in that state the parents yet reside. E. Sturtevant attended school in Delavan, and later, under his father's instruction and guidance, learned thoroughly the mason's trade, commencing at the age of fourteen years. He continued actively at work until the fall of 1863, when he enlisted in Company D, Thirty-Fifth Wisconsin regiment. In April, 1864, he was promoted to second lieutenant, Company A, and in 1865 to captain of the same company. He was honorably discharged in 1866, and returned to Wisconsin, where he was one of the substantial and reliable business men of the community in which he lived, and had the highest confidence of all with whom he had business dealings, a reputation he has fully sustained and justly merits since residing in Chicago.

George Wood, stone setter, is a Scotchman by birth, and first saw the light of day on the 16th of July, 1848. In 1869 he became a resident of the United States, and in 1870 of

Chicago, in which city he has since resided and been prominently connected with the building interests. His trade was learned in his native land, commencing at about the age of fourteen years, and since his residence in the Garden city has been one of its leading stone setters, and since 1878 a contracting stone setter. He did the stone setting for the residence of Hon. C. B. Farwell; the residence of John Cudahay at Thirty-third street and Michigan avenue; the residence of one of the Mandel brothers at Thirty-fourth street and Michigan avenue; the residence of H. C. Chapin; the Armour flats, and the Loomis residence on the north side, besides many other handsome business and office structures, well known throughout the city. He has been a member of the Builders & Traders' exchange for six years, and in 1872 was made a Mason at Apollo lodge No. 642, and now belongs to Washington chapter No. 43, Chicago commandery No. 19, Oriental consistory and Medina temple. In 1873 he was married to Miss Jane Watt, by whom he has three children: Mary R., Jennie W. and George A., and has a comfortable and pleasant home for them at 111 Aberdeen street. He is a republican in politics, and as a business man is one of the most capable and efficient and trustworthy to be found in the city of Chicago.

Benjamin G. Robinson is one of the best known builders in the city of Chicago, and here he has been successfully in business for more than twenty years. Some of the most substantial mason work of the city has been done by him. The mason work on the Methodist Episcopal church at the corner of Langley avenue and Oakley boulevard shows the excellent character and permanence of his work. Another building showing the endurance and excellence of his masonry is the Farragut club house. In addition to these buildings he has done a very extensive business in the masonry of many of the finest residences of Chicago and its suburbs. He is careful, conscientious, experienced and thoroughly reliable, and his large permanent business testifies to his high reputation as a builder. He is a practical mason, having begun learning the trade at the age of eighteen years, serving his apprenticeship in New York city. He was born in New York State in the year 1840. After his three years' apprenticeship he began as a journeyman, and while thus engaged went to Memphis, Tenn., where he commenced on his own account as a mason and plastering contractor. In this he was quite successful, showing promising characteristics from the start. In 1870 he came to Chicago and engaged actively in his trade here. After the great fire his business increased enormously. He was necessarily forced to begin on a limited capital but through steady and persevering efforts, honest work, strict economy, a fine competency and a high reputation have been his reward. His business is now large, lucrative, profitable and satisfactory. He was united in marriage in this city in 1871 to Miss Clarissa Edwards, daughter of Frank Edwards, a merchant tailor of Chicago, who was a resident here as early as 1845, and to this union eight children have been born, seven of whom are living. Himself and family live at 3753 Vincennes avenue. He is a member of the Master masons and also of the Builders & Traders' exchange, National Union and the Royal Arcanum.

Michael McDermott, mason and general contractor, room 91, 159 La Salle street, is an active, intelligent and energetic workman and is doing a prosperous business. He was born



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E. J. Goadshead

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in Ottawa, Canada, in 1846, and in 1850 was brought by his parents, Michael and Catherine (Fitzgerald) McDermott, to this city. His father was city engineer of Chicago for a number of years, and was a well-known and respected citizen. He was city surveyor for three terms was city supervisor for some time, and in 1854 was awarded the first prize in Chicago for his plans for city sewerage, which for various reasons were never adopted, however. He was a democrat, politically, and took a great interest in the prosperity and welfare of his party. He died in this city in 1888. His family consisted of four sons and one daughter: Michael, William M. (who is interested in the mines of Montana and is the owner of McDermott hotel at Butte City, of which place he is one of the pioneers), Andrew (a miner of Colorado), Peter (who has charge of a mining camp in New Mexico) and Catherine (wife of D. O'Connell). Michael McDermott, the immediate subject of this sketch, has been a resident of Chicago since the population was very small, and in the public schools of this city he received his literary training. He enlisted in the Union army in the early part of 1863 and served the United States government faithfully and well for two and a half years. In 1868 he began serving an apprenticeship at the mason's trade, and was afterward in partnership with William D. O'Brien for nearly twelve years, during which time they filled many large and important contracts, three years being devoted to the building of churches exclusively, during which they built many buildings in Pullman. This partnership was dissolved in January, 1890, since which time Mr. McDermott has been alone and is doing a very profitable and satisfactory business. He is the contractor for the South Side Rapid Transit L road, also for the building of all the stations, and with this large and important contract he is making rapid headway. He was the contractor for St. James church, on Wabash avenue; the Church of the Nativity, on Thirty-seventh and Dashiell streets; the Murphy Varnish works, at Twenty-second and Dearborn streets; the Studebaker building, on Michigan avenue, besides numerous others throughout the city, and is now building extensive elevators for P. D. Armour. He was married in 1876 to Miss Isabella Reagan, by whom he has four children: Catherine, Isabella, Florence and William. He was left a widower January 7, 1888, and on January 16, 1889, was married to Mary E. O'Donnell, by whom he has one child, Marie. He is a member of the Builders & Traders' exchange and belongs to the A. F. & A. M., the Royal League, the Foresters and the Royal Arcanum. Mr. McDermott has been quite an extensive traveler, and has made trips through Mexico, the West Indies and South America, taking photographs of all the leading public buildings. He saw the Carracas railroad, in some respects the greatest in the world, and the great pitch lake in Trinidad, from which is derived all the asphalt. His travels have been of great benefit to him in his work, and have tended to broaden and strengthen his views on all matters. He now has his plans laid for a trip around the world. Mr. McDermott owes his success in life to his energy and temperate habits, he never having tasted liquor, though not a prohibitionist in the political sense. He started without a dollar, but he was possessed of admirable pluck. He is a staunch upholder of labor unions, and believes in settling labor troubles by arbitration, and few men are such favorites with their employes as Mr. McDermott is with his. He resides at 3528 Wabash avenue.

W. H. Cameron is a prominent mason contractor and builder, who came to Chicago in 1866 from Kingston, Canada, and has since been actively engaged in the prosecution of his business here. He was born in Belfast, Ireland, March 30, 1847, the son of Nathaniel and Agnes (Kain) Cameron. His father, who died in 1887, aged seventy, was for many years a successful mason contractor, and put up some of the finest linen factories in the city of Belfast. His mother died in Ireland in 1869. Mr. Cameron was educated in Ireland, and upon reaching a suitable age, was apprenticed to learn the mason's trade, which he did in a very thorough manner during a period of seven years. For three years after he reached Chicago he worked as a journeyman, but in 1870 he began to take individual contracts, and has steadily extended his operations with much profit until the present. In 1872 he built the Forbes block, on Washington near Franklin street. Since, among many other structures, he has erected a three-story basement residence block on the north side; (remodeled and rebuilt) the Marine bank block at the corner of Lake and La Salle streets; a fine residence for Dr. Strickland, 50x100 feet, of Tiffany pressed brick, on Lake avenue; a handsome residence for B. A. Miller, at No. 44 Roslyn place, of Tiffany pressed brick and cut stone; and a six-story-and-basement factory building, 25x100 feet, at Washington and Curtis streets; a fine block of stores and flats at Jackson street and Ogden avenue, for J. B. Durand, and about one-third of the business buildings on Ogden avenue, from Monroe to Twelfth street. He is one of the most extensive and reliable of the resident contractors, and has the confidence of the business community. His office is at No. 177 La Salle street. His residence, at 832 West Polk street, is one of a block of elegant pressed brick houses with stone trimmings, which Mr. Cameron built and owns. He was married in 1870 to Miss Lizzie Hyndman, at Freeport, Ill., who bore him five children; William J., Elmer D., Simeon O., Alfred L., and George W. Mrs. Cameron died in March, 1886. Mr. Cameron is a member of Cleveland lodge No. 211, A. F. & A. M., the Royal Arcanum, the Oriental consistory and the Builders & Traders' exchange. He is a republican, politically.

Henry Appel, mason, builder and contractor, with office at 177 La Salle street, box 30 Builders & Traders' exchange, was born August 2, 1842, at Hublingon, Germany. His father was Frederick Appel, a farmer, and his mother, Johanette (Schmidt) Appel. They had a family of three boys and two girls. Henry, at the age of fourteen years, left home with his valise on his back, and the first day went to Coblenz-on-the-Rhine, the second day from Coblenz to Solingen, and the third day from Solingen to Rehmsheid, where he did his first day's work on his own account. This work was done for John Shaller, an architect and builder, and consisted in making mortar and carrying it in. He next learned to cut stone, lay stone and brick and do plastering, and while he was thus engaged he attended evening school, and had the privilege of free entrance to Mr. Shaller's office to learn to draw. He received for his services eight silver groschen, and for his best day's services, \$1.10. This was in 1865. On March 22, 1866, he left Germany, passing through Holland on his way to England, and there took passage on the ship Virginia for America. Four days out from Liverpool cholera broke out on the vessel, and during the next six days many of his friends died and

were buried in the ocean. On April 12 the vessel arrived near New York, but was compelled to remain outside the harbor in quarantine for about four weeks, until the cholera had subsided. Upon his arrival in New York he had no money, as his small supply had been spent to help the sick. For some time he endeavored to secure work in New York, but failing, he came to Sandwich, Ill., where for two years he worked as a bricklayer, at the end of which time he started independently for himself, and in the fall of 1871 he came to Chicago and for one year worked as foreman for Glading & Howard, then began contracting on his own account. He did work on the residence and storehouse of M. Gottfrieds, W. C. Seipp's residence, C. Seipp's building at Franklin and Van Buren streets, a building on Lake and South Water streets, the Seipp boiler house and chimney, Schoenhofen's brewery, Horber's Turner hall, the Chicago brewery, E. Hudson's block, the residence of Mr. Anderson of Jurgens & Anderson, the Chicago sugar refining dry-house, Dr. H. Marekel's residence, J. Swan's residence on Michigan avenue, Morton's block on North Clark street, A. Shutler's stores on Wabash avenue, and a great many other structures. All his work has been well done, and he deserves great credit for having accomplished so much from such a small beginning. He is a member of the Blue lodge of Masons, and is also a Scottish Rite Mason, a noble of the Mystic Shrine, a turner and a sharp shooter. He is a member of the Builders & Traders' exchange and of the Master Masons' association. He was married in June, 1874, to Miss Christina Sporelein. They have five children: Henry Louis Wolfgang, Louise Wilhelmine, Ida Caroline, Frederick Alexander and Adolph Wilhelm.

George McBeath, of the firm of McBeath & Rowe, stone and iron setters, has offices in this city and at Portland, Ore. Mr. McBeath came from New York to Chicago in the spring of 1871, and since that date has been engaged in active business operations here. His labors have extended well over the city, and he has been repaid by a large share of public favor and patronage. The firm did the fine stone and iron setting on the Royal Insurance building, the Home Insurance building, the Rookery building, the Phenix building, the Chamber of Commerce building, the Leiter building and the Cold Storage Express building. This work alone will show in what high favor they are held for their methods, business habits and capacity. No more difficult work of this character can be found in the United States than that done by them in Chicago. They are eminently qualified to execute in a most satisfactory manner all contracts of a similar nature. Mr. McBeath was born in Scotland, March 7, 1843, and was there educated. At the age of sixteen years he began learning the mason's trade, serving a three-year apprenticeship, and worked at that trade in his native land until 1869, when he came to the United States, and for two years worked in New York city, coming thence to Chicago. For about three years the firm has been in business also on the Pacific coast, one year in San Francisco and two years in Portland, Ore. They are expanding their business in the line of cut stone and brick work.

Anderson Minor is a prominent mason contractor, located at 84 La Salle street. He is an active business man, and is well known to builders and contractors of Chicago. He built the Methodist Episcopal church, the Campbell block, the large Presbyterian church, the Findlay

block, the old Board of Trade building, and many others of similar design. He is careful, painstaking and faithful in following the designs of the architect, and in all cases has given excellent satisfaction both to the architect and the owner. His large and active business proves in what estimation he is held by business men and the building fraternity. He came to Chicago October 11, 1871, and at once entered actively upon the prosecution of his business. That was the time when the great fire had laid the city in ruins, and before him spread out an enormous quantity of work, in the accomplishment of which he has made name and fame. He built the Hamlin & Hall block, at the southwest corner of Madison and Franklin streets, and in 1875 associated himself with P. J. Sexton, and built the Cook county hospital and the Cook county courthouse. This partnership continued until 1880, and the following year he formed a partnership with John C. Robinson, which subsisted until 1889, since which date Mr. Minor has been alone. During his partnership with Mr. Robinson the firm erected scores of the largest and best buildings of all kinds in all parts of the city. Among these buildings are the following: The Hyde Park water works tunnel, several large and fine school buildings. Since he has been in business alone, he has built the large Jewish synagogue at Thirty-third street and Indiana avenue, and the Crane Brother's foundry at the corner of Desplaines and Fulton streets. Many of these buildings are very large, of intricate and perplexing designs with angles and gables, and founded upon models of old school architecture. In their construction Mr. Minor has shown a degree of intelligence, skill and good judgment which is unsurpassed in the history of the building trades of this city.

His ability and honesty are best appreciated, and he possesses the highest reputation where he is best known. He is a republican and a thirty-second degree Mason, belonging to Oriental consistory and Apollo lodge No. 642. He was born in Cleveland, Ohio, January 31, 1840, a son of William and Mercy (Anderson) Minor, the father being a native of Bloomfield, Mass., who died at Cleveland, Ohio, in 1847, at the early age of thirty-seven years. The mother was born in Cleveland in 1817, and is yet living, a resident of this city. She is a daughter of Barney Anderson, a native of Vermont, and a soldier under General Jackson, at New Orleans. The Minors were pioneers of Ohio. Anderson Minor is the only child living of a family of two, born to his parents. He was reared in Cleveland, and was educated there and in Hiram college, where for some time he was a schoolmate of James A. Garfield, and still later, when Garfield became president of that institution, he became his pupil. Upon completing his education he entered a store at East Cleveland, where he spent one year, and then began learning the mason's trade. In 1861 he removed to Toledo and began the mason's business for himself, and in that city erected many of the most substantial buildings now standing. He is one of Chicago's best business men and most substantial citizens. In 1863 he married Miss Geraldine Porter Horton, who died in 1880 leaving two sons: William R. B. and Darwin B. In 1882 he took for his second wife Miss Minnie Alice Fair, of which union were born three children: Alice Geraldine, Milton R. and Charles A.

N. Gerten & Co. is the name of one of the best known mason contracting firms of Chicago, and some of the most noteworthy of the buildings put up by them since the great fire

of 1871 are as follows: The Polish church on Robey street; an addition to the insane asylum; the St. Michael school; all the work of the North Side Street Car line; Mr. Harding's block, corner Division and Clark streets; Mr. Well's block, corner of Sedgwick and Center streets. This firm has been principally occupied in the erection of residence buildings, but also put up St. Alphonsus' church on Southport and Lincoln avenues, and numerous factories and warehouses, and are now erecting St. George's church at Thirty-ninth street and Wentworth avenue. The work of this firm is characterized by thoroughness, dispatch and neatness, and reflects great credit upon the founder, N. Gerten, whose business methods, ability and activity have placed his firm among the best in the city. After making name and fame for himself as a contractor and builder, he retired from the business in 1887, and left the work which had been so admirably inaugurated by him, to be carried on by his sons. One of the latest triumphs in the line of unique and curious building was accomplished by Mr. Gerten: George A. Schmidt, a soap manufacturer on North avenue, wished to enlarge his premises, but was desirous of continuing his business uninterrupted, and after consulting with architects, it was deemed practicable to build around the old structure, and Mr. Gerten was employed to carry out the plans, and succeeded in erecting a handsome four-story brick structure without the slightest interference with the business of Mr. Schmidt. Mr. Gerten was born in Germany in 1828, and many of the admirable qualities for which the German people are famed, are among his leading characteristics: pluck, energy, thrift and honesty. When he had attained the age of seventeen years he began serving an apprenticeship at the weaver's trade in the land of his birth, after which he established himself in the business and became an expert at fine weaving. In 1848 occurred the German-Prussian revolution, and Mr. Gerten was drafted to serve in the Prussian army. He fled the country, and until immigrating to America, made his home in Belgium and France. He came to America in 1852, locating in Chicago in the same year; and as Chicago even then gave promise of becoming the magnificent city that she now is, he decided that the calling of a mason held forth more promise of gain than that of following his trade, and in order to become proficient in this business he apprenticed himself to lay brick, and labored for some time as a hod carrier, carrying brick up five stories. In three years he was admirably fitted to engage in contracting, which he did, principally as a plasterer. Two years later he returned to his native land, where he married Miss Mary Wagner, and with his young wife returned to America and resumed contracting in Chicago, continuing until the great fire of 1871, at which time he lost all his hard earned accumulations, among them being four brick buildings on North avenue. After the fire he resumed his former occupation, in the prosecution of which calling he has won golden opinions from his patrons and fellow contractors. Although he is now retired from actual business life, he still gives considerable attention to the building interests, and is a member of the Master Masons' association, the Builders & Traders' exchange, and is a stockholder in and president of the Peerless Stone Company at Joliet, Ill. He is vice president of the Columbia Planing Mill Company, which manufactures sash, doors, blinds, etc. His residence is at 463 Cleveland avenue. Of eight children born to him two sons and one daughter survive. His

son, John Gerten, is a member of the firm of N. Gerten & Co., and was born in Chicago, at 342 North avenue, September 11, 1865, and in the fine public schools of this city received his initiatory education, and is also a graduate of Bryant & Stratton business college. Before he attained his fourteenth year he began learning the mason's trade under the instruction of his father, and since fifteen years of age has followed that trade, having taken charge of mason work at the age of nineteen. Since the firm of N. Gerten & Co. was organized, in 1887, he has been a member, and largely under his supervision its extensive operations have been conducted with eminent skill and ability. He is industrious in his habits, progressive in his ideas, and has familiarized himself with all modern styles and designs, and brings his intelligent and practical views to bear in his line of work. Tony Lindensmith, another member of the firm of N. Gerten & Co., was born in Prussia, and came to Chicago about 1880, having received his education in Europe, in which country he also began learning the mason's trade, completing his knowledge of it in Chicago. John Gerten is a member of the Builders & Traders' exchange. He was married in 1889 to Miss Angeline Becker, a native of Chicago, by whom he has one child, Johannah A.

Nathaniel Cameron, of the firm of N. Cameron & Son, mason contractors and builders, was born and learned his trade in the town of Carrickfergus, County Antrim, Ireland, and first came to Chicago in the year 1857. Owing to the dullness of the times he returned to the East soon afterward, and during the Rebellion he was in the United States merchant marine service and was engaged in carrying stores to the Army of the James. In 1865 he returned to Chicago and worked for the firms of Dunphy & Wall, R. E. Moss & Co., and James Rutherford, and in 1868-70 he was engaged as foreman for E. F. Dore, but left the services of Mr. Dore some months before the great fire of 1871 to engage in business for himself, and has continued with success up to the present time. In 1888 his eldest son, Thomas, became his business partner, and is now actively engaged in the mason business, and he has two younger sons who are also learning the mason's trade. These young men he expects to carry on the business he has so admirably built up long after he has ceased to take an active part in building affairs. He has made numerous friends during his career, and by his own industry has won a comfortable competency. He resides in his own house at 342 Winchester avenue. He has erected many buildings in the three great divisions of the city, and has become widely and favorably known as a mason contractor and builder.

B. N. Branch, a well-known builder, was born in England August 28, 1837, and came first to the United States in 1864. In 1871 he began business in Chicago for himself, as a contractor and builder, having previously located here during the autumn of 1869. He constructed the large building for J. M. Hill, on Oakwood boulevard, in 1871; and the Woodruff hotel, on Wabash avenue and Twenty-first street in 1872; a large block of buildings for William Downing, on Bowen avenue; a building for the Franklin Bouk Company; a building for William Downing, between Vincennes and Grand boulevard; the residence of D. H. Baker, on Cornell avenue between Fifty-third and Fifty-fourth streets, worth \$20,000 (Mr. Branch being both builder and architect); a house for Fred Rich, on Ellis avenue, worth

\$7,000; a substantial block for Mrs. J. V. Perkins, on Oakwood boulevard; two strong houses for J. N. Hill, on Langley avenue, valued at \$20,000; five other houses on Oakwood boulevard for the last-named gentleman; six houses for J. W. McKeever, on Bond avenue; the tasteful residence of J. E. Cowels, on Lake avenue, and block of buildings for the same gentleman; a block of beautiful green stone front on Drexel boulevard, near Fortieth street; a sumptuous residence and flats for J. D. Heitner, on Drexel boulevard; a house for Dr. Taylor, on Oakwood boulevard; the extensive storage and manufactory for Dawson Brothers, on Halsted street, near Milwaukee avenue; remodeled a large house for the same firm on Sangamon street, near Harrison; a block of houses for William Raymond, on Indiana street, and scores of others in all portions of the city. While he was a resident of Europe Mr. Branch studied architecture, and is therefore well qualified, not only to construct but to design as well. In the fall of 1884 he went to Lincoln, Neb., and made the plans for a building and block of large buildings. In the fall of 1889 he remodeled and added largely to a very fine building on Oakwood and Lake avenues for W. S. Wilson, valued at \$40,000. In 1887 he erected a block of three stories on Cottage Grove avenue for Mrs. A. V. Perkins, and for Mr. Perkins, in 1890, he erected a block of flats on Evans avenue and Sixty-third street, and an elegant residence for the same gentleman. He built the finished residence for A. G. Spalding, on Cornell avenue and Fifty-first street; and in 1889 two large houses for W. W. Gilbert, of Kankakee, Ill. In 1880 he built a fine residence at Danforth, Ill., and a hotel at Gillman, Ill. In 1890 he put up the residence of John Monnahan, on Evans avenue and Forty-fifth street. He also built the flat blocks for Hugh Weaver, on La Salle and Thirty-sixth streets, and in the spring of 1891 the flat building of J. M. Nugent, of Seventy-first and Champaign avenue. At the present time he is the architect and designer of the block of six buildings to be used as residence flats on Langley avenue, near Forty-third street. He also designed and built his own residence at 49 Oakwood avenue. His extensive experience, steady adherence to his business, together with his knowledge of the fine art of recent architecture, place him among the leaders of his important occupation.

The firm of Hayes Brothers, builders and contractors, with office at 819 Insurance Exchange building, has been in existence since 1872, and is composed of D. H. Hayes and his brother, J. C. Hayes, the former of whom was born in the city of New York on the 5th of December, 1848, a son of Benjamin and Margaret (Kerns) Hayes, who were born in the Emerald Isle. Benjamin Hayes was a mason and farmer by occupation, and after a well-spent life, died in Michigan in May, 1873, at the age of sixty-two years, his widow being still a resident of that state. D. H. Hayes received his initiatory training in the common schools of Michigan, to which state he was taken at an early age, and when about eighteen years of age he began learning the mason's trade, at which he served an apprenticeship of three years, working as a journeyman for some time thereafter. In 1867 he went to the Lone Star state, and since that time has devoted his attention wholly to contracting, but since 1868 has been a resident of Chicago, where he has built up a reputation second to none for the excellence of his work and the thorough and practical knowledge of his

calling. In 1888 he put up a large and elegant block extending from 42 to 52 North Halsted street for himself, after which he erected a block of flats on Dearborn street (south side). He then went to Fort Madison, Iowa, where he constructed the plant for the Fort Madison Iron Works Company, which contract amounted to \$150,000; and in the fall of 1888 erected the engine-house for Chicago on West Lake street, and in 1889 the Duluth (Minnesota) Chamber of Commerce building, the latter contract reaching the sum of \$123,000. The same year he did business to the extent of \$15,000 in Duluth, and in 1890 erected a large building for the Minnesota Loan & Trust Company, for \$52,000, and the Bell & Miller block, of that city, for \$23,000. Following this they erected the W. S. Woodbridge office building, an elegant structure, for \$36,000, did some \$5,000 worth of work for the Duluth Gas & Water Works Company, and erected a small mill for \$2,700. The work done by the Hayes Brothers is of the highest order of durability, finish and beauty, and affords them the strongest leverage in their prosperous business. D. H. Hayes is a member of the Builders & Traders' exchange, the Master Masons' association, and the Royal Arcanum, and in his political views he is a staunch democrat. He was married in 1874 to Miss Anna Burns, a native of Michigan.

J. C. Hayes. This gentleman is the junior member of the well-known building and contracting firm of Hayes Brothers, whose office is situated at 819 Insurance Exchange building. They have been associated in business since 1872, and have seen it grow into large proportions and a notable success. They have been enabled through efficient service to achieve a distinction and patronage investing them with the conspicuous merit which has during their career been attached to them. J. C. Hayes was born at Victor, Ontario county, N. Y., September 14, 1851, and obtained his early knowledge of the world of books in the public schools of Michigan. In 1869 he emigrated to Texas, and was there engaged in the building business until 1871. Two years later he went to California, and was in the contracting-business in that state until 1882, his knowledge of his calling becoming so universally known that his services were brought into requisition in the construction of the beautiful Palace hotel of San Francisco, as foreman. He has had charge of the business of the firm in Duluth, Minn., in the management of which he has shown himself to be a shrewd and practical man of business, and upright in every worthy particular. He is liberal in his political views, is a member of the Builders & Traders' exchange, and belongs to the I. O. of F., Court Arion No. 21. He was married in 1882 to Miss Ellen McKering, a native of Buffalo, N. Y., by whom he is the father of two children: Francis and John C., Jr. Mr. Hayes has been a citizen of Chicago since 1869, his residence being at 486 West Huron street.

John Mountain is an able and experienced mason contractor, and during the twenty-three years that he has resided in Chicago and worked at his calling he has become well known for efficient and intelligent workmanship. Among the numerous substantial buildings which are the result of his handiwork, and which bear evidences of skill, sound judgment and thoroughly practical views, may be mentioned the following: The residence of George W. Hale, at 541 Dearborn avenue; the residence of Mayor Hempstead Washburne, at 152

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Astor street; the residences of E. S. Washburne, Mr. Stanton, C. N. Eay and H. B. Stone, on Bellevue place; and the residences of George B. Carpenter and Francis Lackner, on Dearborn avenue. Many other fine buildings have been erected by him, but to the building of residences, churches and school buildings the most of his attention has been given. His place of business is at 159 La Salle street, and his residence at 226 Sedgwick street. He was born in Sweden on the 22d of March, 1848, son of Jacob and Catherine (Larson) Mountain, natives of that country, where the mother died, and the father (a mason contractor) still lives. In the land of his nativity John Mountain was reared and educated, and at the age of sixteen years began learning the mason's trade in Stockholm, and in that city worked as his trade until 1868, when he became a resident of the United States, working as a journeyman until 1873, when he began contracting on his own account. He is a gentleman of large experience in his line of business, and the demands made upon his time are large and constantly increasing. He has been a member of the Builders & Traders' exchange ever since its organization, and since the organization of the Master Masons' association he has been one of its foremost members. He has made two trips to Europe since his residence in Chicago, first in 1884-5 and again in 1889. He was married on the 31st of January, 1874, to Miss Matilda Peterson, a native of Sweden, born in 1849, and by her has four children: Edith, John Theodore, Agnes and Grace. Mr. Mountain is a member of the I. O. O. F., First Swedish lodge No. 479, and Excelsior encampment No. 3. He deserves much credit for the admirable way in which he surmounted the many difficulties that strewed his pathway during his early residence in this country, as well as for the success he has attained to in his business, and for the reputation he has as a citizen and a contractor.

John Griffiths is a prominent contractor and builder, not only of this city but of the United States, and many evidences of his skill may be seen throughout the country. He first came to Chicago in 1869, but remained only a short time, not locating here permanently until 1871. His career since that time has been one of progress and honor. He began contracting in 1873, and sustains a wide reputation as a reliable, active, enterprising and thorough man of business, and there is ample evidence to show that this reputation is deserved. He is thoroughly self-made, and as he has been compelled to think and act for himself since his early youth, his views on matters and things are original, shrewd and eminently practical, showing that he possesses a mind of no ordinary power. Owing to his high standing as a contractor and builder, he was entrusted with the erection of the following among many other buildings in this city: The Rialto building, the Traders' building, the Grand Central depot, the magnificent and imposing Chicago hotel at Dearborn and Jackson streets, and the Masonic Temple at the corner of State and Randolph streets, in many respects the most remarkable structure erected anywhere in the world within the past decade. S. S. Beman has prepared plans for a fine residence to be built by Mr. Griffiths on Michigan avenue near Twenty-sixth street. It will be constructed of stone, and will cost \$25,000.

Napoleon Provost is a mason and general contractor, his address being box 128, Builders & Traders' exchange. He was born in Montreal, Canada, April 7, 1849, and in 1868

came to Chicago and remained here for seven years, when he returned to Montreal, in which city he continued for the period of six years, during which time he was actively engaged in contracting, in which he had begun in 1874. He built one of the largest churches in Montreal, and also one of the city's finest schoolhouses, besides many beautiful residences, etc. In 1879 he again came to Chicago, and since that date has remained here, extensively engaged in the prosecution of his business. He put up the Goodall building at the corner of Cottage Grove avenue and Bowen avenue, which cost \$200,000. He has operated very extensively in sewer building, and in this work, of which he makes a specialty, is very competent. He is self-educated and self-made, and is a prominent member of the Builders & Traders' exchange. He resides at 620 West Taylor street, and his residence there is the most sumptuous on that street. He has accumulated considerable property, and is a worthy citizen of the city. In 1868 he married Miss Clemence Ectice, who was born in Canada. They have five children: Napoleon, Felix, Carrie, Joseph and Mary.

Anton Carlson is one of the substantial and successful brick masons and contractors of Chicago, and of this populous and enterprising city of the West he has been a resident since 1868. He has won an enviable reputation as a practical mechanic, for although his duties have been multitudinous, he has always discharged them with conscientious faithfulness, and the many substantial and handsome buildings which he has erected testify in a praiseworthy manner to his skill as a workman and to his reliability as a contractor. He commenced contracting on his own responsibility in 1876, and in 1887 associated with him in business, Louis Berg, an excellent and practical business man, and their connection has remained unbroken up to the present time. They form a pushing and enterprising firm, and for various reasons rank among the leading mason contractors of the city of Chicago, for they have never been content to remain at mediocre, but have made their motto onward and upward. They have contracted for and erected some of the stanch and standard buildings of Chicago, among which is worthy of mention the Central Union block, at the corner of Madison and Market streets, at a cost of \$200,000, which building may be said to be one of the monuments of their brick masonry. Other buildings, too numerous to mention, have been erected by them. Mr. Carlson is a successful financier, being the owner of a fine frontage property on West Erie, West Huron and other streets. He was born in Gottenberg, Sweden, October 12, 1837, and in his youth was brought up to an agricultural life by his father, who is now deceased. His initiatory education was received in the subscription schools, but the greater part of his education was obtained by his own efforts. He is practically a self-made man, for at the age of fifteen years he began life for himself without a dollar of his own, and by his own unaided efforts has become the practical business man that he now is. He began learning the brick masons' trade in his native city, at the age of sixteen years, but soon showed such proficiency and aptitude for the business that he was promoted to the position of foreman at the age of twenty-one, and continued as such until emigrating to America in 1868, having since been a resident of Chicago, as above stated. He was the eldest of the following children: Anton, Carl, Martin, Fina, Marie, Emily and Beata, wife of Charles P. Carlson, a captain of a vessel

on Lake Michigan. The mother of these children resides in Chicago, with her son, Anton, who was married in his native land in 1863, to Miss Albertina Lindgren, their union resulting in the birth of nine children, four of whom are deceased. Those living are Ollie, wife of William MacCullough, a merchant; H. Constance, who is now attending high school, from which she will graduate in the spring of 1891; Lillie, who is also attending the public schools; Agnes and Lulu. The career of Mr. Carlson is an apt illustration of what enterprise and push will accomplish without the aid of money. He possesses a high moral character, and as a man of business is considered among the foremost.

Antoine Delfosse, the senior member of the firm of A. Delfosse & Son, mason contractors and builders, resides at 286 Armitage avenue, his box being 209 at the Builders & Traders' exchange. He was born in Belgium, May 24, 1840, and was there educated. In 1863 he immigrated to the United States and settled in Chicago, and here he has since resided and battled with fortune. He learned his trade in Belgium, and after his arrival in Chicago followed it by the day until 1876, and thereafter for nine years was employed by Mr. Moss, an extensive mason contractor. In 1876 he began making contracts on his own account, and since 1888 his son has been associated with him under their present firm name. The son was born in Madison, Wis., in 1864, and his life, thus far, has been almost entirely spent in this city. He was educated at the public schools, and took a business course at Bryant & Stratton's commercial college. He began learning his trade in 1880. The operations of the firm have been active, valuable and extensive. They have put up buildings at 725 Milwaukee avenue, at 512 and 514 Noble street, and a large building at 286 Armitage avenue, all of which Mr. Delfosse owns, besides valuable improved real estate on the west and south sides. He built a large house at 4207 Grand boulevard, which he sold about a year and a half ago; built and owns three structures at 4419, 4421 and 4423 Ellis avenue, and built by contract a large building at 625 West Indiana street, five houses on Center avenue and McAlister place, several good houses on Vernon avenue, two houses on South Park avenue, a fine residence at 42 Fowler street for Henry Cohn, and a large seven-story factory for Karpen Bros. at Wood street and Park avenue, besides numerous others. He has been a member of the Builders & Traders' exchange since its organization. In 1860 he married Miss Marie C. Vandercam and has six children: Emmernce, Anthony F., Joseph, Charles, Henry and Cecilia. Mr. Delfosse is a member of the Roman Catholic church, and of the Chicago Master Masons' association.

W. M. Crilly is a well-known contractor, and since 1869 has been a resident of Chicago, where he immediately commenced learning the mason's trade. He served a three-year apprenticeship under his brother, D. F. Crilly, who was at that time one of the most prominent contractors here, but who is now retired. In 1873 W. M. Crilly went to California and worked at his trade on the famous Palace hotel building in San Francisco, the largest building of its kind in the world. He remained on the Pacific coast three years, at the end of which time he returned to Chicago, and in 1877 began working for himself and was associated with his brother, D. F. Crilly. This partnership survived one year, when he continued alone

the builders of the city. He was born in Germany, November 9, 1851, and is the son of John and Henrietta Schwerin, also natives of Germany, his father's birth having occurred in 1822 and the mother's in 1824, the death of the latter having occurred in Chicago in 1886. The family came to Chicago from Germany in 1867. In 1873 Mr. Schwerin married Miss Reaker Ebert, who died in 1884. The following year he married Miss Theresa Horn. He has by his first marriage one child, Anna, and by his second, three children: Max, Alma and Otto. Mr. Schwerin is a member of the Builders & Traders' exchange, and of the Lutheran church. He is a republican in his political views. In April, 1890, he was elected to the city council from the tenth ward, after an exciting contest, by a plurality of seventy-three.

Frederick Siebold, who is a mason contractor, has erected the following buildings in the city of Chicago: A factory for Mr. Owsley and Lonis Nonnast, a fine apartment building for Mr. Schuman, Fifty-sixth street and Cornell avenue, and a 50x125 four-story building for Mr. Gillis, corner Jay and Center streets, all of which are substantial structures, the mechanical skill displayed in their erection being apparent to very superficial observers. Constant supervision has been given by Mr. Siebold to their proper construction, and it is a natural deduction that the work done by him is up to the highest standard, and the quality, finish and perfection of details, as well as in scientific principles of construction, the very highest. Mr. Siebold was born at Hilden, Germany, on the Rhine river, April 13, 1856, to Frederick and Fredericka (Neubauer) Siebold, the former of whom was a chemist. Frederick Siebold was given an excellent education in the schools of his native land, and for some time attended a school for the building arts at Holzminden on the Weser, afterward completing a term of two years in military training. He first landed in America in the year of 1879, the same year becoming a resident of Chicago, where he soon engaged in contracting, a calling he has since continued to follow. He was married in this city to Miss Hattie Jenezewsky, but was called upon to mourn her death in 1888, she leaving him with two children to care for: Harry and Hattie. His second union was to Miss Katrina Feddersen, who was born in Denmark, a daughter of Martin and Margaret (Thormann) Feddersen. The second union has resulted in the birth of a son, whom they have named Frederick.

James Phillips is one of the mason contractors of this city, and has been very active since his residence here. The extent of his work and his steady trade show the esteem in which his services are held. He commenced business in this city in 1881, since which date he has erected the following buildings: Three stores, three stories high, on Fifth avenue, for Moore, Halleek & Tree; three stores, three stories high, on Fifth avenue, for Flynn & Pettibone; two stores, three stories high, on Wabash avenue, for D. A. Kohn; four stores, four stories high, on South Water street, for Dorson & Shields; four stores, four stories high, on South Water street, for Mr. Wadsworth; the power station and one-hundred-and-fifty-foot stack at Twenty-first and State streets, for the Chicago City Railway Company; the power station at Fifty-second and State streets, for the Chicago City Railway Company, the power station at Fifty-fifth street and Cottage Grove avenue, for the Chicago City Railway

Company, barn at Twenty-first and Dearborn streets, for the Chicago City Railway Company; the house and barn on Michigan avenue, for D. A. Kohn, the house and barn on Michigan avenue, for D. McCallay; the house on Michigan avenue for Moses Born; the house and barn on Michigan avenue, for R. T. Crane; the house on Michigan avenue for F. Siegel; three houses on Michigan avenue and Harrison streets, for Daniel Wells; a house on Prairie avenue, for Henry Corwith; two houses on Prairie avenue, for Mr. Hess; a house and barn on Prairie avenue, for C. B. Holmes; two houses on Indiana avenue, for Marvin Hughitt; a house on Forest avenue, for C. Williams; a school house on Forty-fifth street and St. Lawrence avenue; two houses on Dearborn avenue, for Mr. Wetzel; a house on La Salle avenue, for A. Beek; a house on Elm street, for D. Willie; a house on Erie street, for Edwin Blackman; five stores, three stories high, on Madison street and Bishop court, for Perkins & Cole; two stores, three stories high, on Madison street and Bishop court, for Henry Corwith; four stores, four stories high, on Madison near Leavitt street, for Judge M. F. Tuley; two houses on Winchester avenue, for Mr. Sivier; a house on Warren avenue, for Mr. Owsley; two houses on Park avenue, for Mr. Buckley; a house and barn on Adams street, for Mr. McLeon; a factory for Mr. Owsley at Madison and Robey streets; a house on Indiana avenue, for Mr. Lombard; two houses on Monroe street, east of Hoyne avenue, for Mr. Fernauld; a barn on Halsted and Oneil streets, for the West Division Railway Company; seven houses on South Park avenue, near Thirty-third street, for W. B. Phillips; two houses on Calumet avenue, for Mr. Hanill; he also rebuilt the Anderson Pressed Brick works. Mr. Phillips is a native of England, born in Manchester, May 29, 1839; when twelve years of age was brought to this country. He is married and has five children. Teresa, his wife, was born January 8, 1884, in Perryville, Mo. His children were born in Chicago; Edwin A., born May 15, 1871; James F., born December 27, 1874; Mary T., born April 8, 1877; Ione N., born November 25, 1879; Charles A., born October 24, 1881.

Edward J. Molloy is a mason, contractor and general builder, with residence at 268 Park avenue. He was born in Mount Mellick, Queens county, Ireland, in 1852, a son of Timothy and Mary (Geoghen) Molloy, the former of whom died in his native land in 1890, at the age of eighty-one years; the latter has been dead twenty-five years. Mr. Molloy's father was a mason contractor, and many important contracts in Ireland, France and England were filled by him. Mr. Molloy came to the United States in 1869, and was a resident of the city of New York until 1871, in which year he came to Chicago, and in this city he has since resided and labored. He learned his trade under his father in Ireland and could have had no better or more desirable instructor. He worked as a journeyman in New York and also after coming to this city until 1881, but since that time has been contracting on his own account and has shown himself to be capable of filling large and important contracts. He did the mason work on the Geneva (Illinois) private insane asylum; an addition to the Keeley Brewing Company's building of Chicago, four million bricks being used in its construction; a large warehouse for Morris & Stern, on Canal and Twelfth streets, the Madison Hall building at 148 to 152 West Madison street, which will be absolutely fireproof; the Jewish syna-

gogue at the corner of Clinton and Judd streets, which is a very handsome structure built in 1887-8; a block of buildings for Timothy Ryan at the corner of Taylor and Halsted streets; a block of buildings at Green Bay, Wis., for Joennes Brothers, the entire building costing \$65,000; the school of the Sisters of the Good Shepherd at the corner of Forty-ninth street and Prairie avenue, a four story building 180x90 feet; a residence for Patriek O'Brien on Warren avenue; a residence for Thomas O'Conner at the corner of St. Louis avenue and Lake street, besides many others. Mr. Molloy is an expert as a builder of tunnels, and in 1877 built a fine one at Chattanooga, Tenn., for the Rhone Iron works. He has been a member of the Builders & Traders' exchange since the first year of its existence. In 1885 he was married to Miss Lizzie Cavanaugh, a native of Ottawa, Ill., by whom he has two children living and two deceased. Nellie and Francis, living, and Edward T. and Catherine, who died within one week of each other in March, 1891. Mr. Molloy belongs to the A. O. U. W., Golden Rule lodge No. 222.

John T. Halls is a mason contractor of high ability, established in Chicago in 1882.

Among the active, successful and deserving builders and contractors of Chicago, none are more deserving than Mr. A. Lanquist, who was born in Sweden, November 26, 1856, and was educated in his native country. After attending school until fifteen years of age, he began serving an apprenticeship at the mason's trade, continuing three years, during which time he thoroughly learned the details of the business. At the end of this period he began working at his trade, but one year later became a student in a technological school in Sweden, from which he graduated in three years, or in 1875. The following five years he was in the employ of the Swedish government in the construction of railways, then came to the United States and located in Chicago, and here, for some two and a half years, worked at his trade, then began contracting. He has continued this business successfully since that date, and among the many handsome and lasting structures in the city the following are attributed to his skill and ability: the Monon block, thirteen stories high, on Dearborn street; an eight-story block on Fifth avenue, between Quincy and Jackson streets; the Manhattan building, running from Dearborn street to Third avenue, sixteen stories in height, besides many other almost equally noted buildings. Mr. Lanquist is a member of the Builders & Traders' exchange and the Master Masons' association. He is one of the leading contractors of the city, is conscientious in his work, is intelligent, persevering and honorable, and his time is fully occupied. In 1883 he was married to Miss Esther Peterson, by whom he has two daughters.

Michael J. Benson, mason contractor, was born in Wigan, Lancashire, England, June 2, 1856, a son of Patrick and Mary (McHale) Benson. Mr. Benson was educated in his native country, and learned the mason's trade there, serving a four-year apprenticeship with the firm of Joseph Howard, of Wigan, England, and two years with the Wigan Coal & Iron Company. After working three years as a journeyman in that country he came to the United States in 1880, his parents having died, and in the fall of that year came to Chicago, and this has been his home since. He began contracting in 1882, and has since continued with

much success. He built, on the north side, the residence of Messrs. Delaney, Clifford, Santer, Bloom, Booth and Engard, on Cleveland avenue; and he has erected some factories and business blocks. He is a member of the Builders & Traders' exchange, and his headquarters are at 293 Hudson street. He married Miss Mary Early, December 31, 1889, and has a daughter named Mary.

D. Laue, was born November 15, 1840, in Coblenz, Benson Province, Hanover, Germany. He was there educated. At the age of fourteen years he began an apprenticeship at the mason's trade, and upon completing his term of service, he worked at his trade for several years in Germany. In 1872 he crossed the ocean and came to Chicago, and for ten years worked by the day at his trade. He is one of the most successful and practical men in his line of mason contracting in Chicago, and evidences of his excellent work may be seen in many portions of the city. Since 1882 he has been taking contracts on his own responsibility, and among the excellent work done by him are the residences for Mr. Turner, on the lake shore drive; the Mels and Spofford residences, Garfield park and Washington boulevard; the residence of D. K. Hill, at Twenty-sixth street and Michigan avenue; the residence of Mr. Burch, on Indiana avenue near Twenty-sixth street; Charles Counselman's residence, at the corner of Fiftieth street and Greenwood avenue; the residence of Mr. Linn on Michigan avenue near Twenty-sixth street; the Weber Wagon Company's factory, on Eighty-first street; the Baptist church on the north side, at the corner of Burling and Willow streets; St. John's church, on Franklin street; St. Lucas' church, at the corner of Belmont and Perry avenues; and many other elegant and tasteful and convenient residences, stores and flat buildings here. He is a member of the Builders & Traders' exchange, the Knights of Pythias, and of the German Evangelical church. He was married in Germany in 1868 to Miss Caroline Mayer, born in 1841, in Tanzsted by Pinneberg, who died in 1884. Later in the same year he married Miss Matilda Blodorn, born in 1854, in Neu-Wurow, province of Pommern, Germany. By his first marriage he had five children: Amelia, Henry, Diedrich, August and William; and by his second marriage has three children; Ella, Annie and Emiel.

Thomas J. Prendergast is a son of Patrick and Ann (Brown) Prendergast, and a member of one of the most distinguished families of the country. He is of Irish descent, and was born June 29, 1857. The father was an experienced road contractor and bridge builder. Thomas J. was well educated in Ireland and came to Chicago 1879, having previously learned the mason's trade in his native land. After his arrival here, he worked by the day for the period of about three years; but in July, 1882, began taking contracts at his trade and since then has thus continued with much success. He has built up a good business and a good reputation in a comparatively short period. He erected all the Catholic institutions at Fifty-fifth street and Wentworth avenue, five or six in number; a brick building of nine stories; a block of fourteen houses on Seventy-ninth street between Wright and Dickey streets; three three-story buildings on Fifty-ninth street and Wentworth avenue; two three-story buildings on Fiftieth street and Wentworth avenue; two three-story buildings on State and Forty-first streets; a building on State and Fiftieth streets; two at Fifty-third and State streets; two

large livery barns, one on Fifty-fourth and State streets, and the other on Fifty-eighth and State; a block of twelve buildings on State street between Forty-seventh and Forty-eighth streets; a building at 28 Sherman street, and many others. He is doing a successful and extensive business. He is one of the most active, useful and reliable members of the Builders & Traders' exchange. He is a communicant of the Catholic church. He was married June 6, 1882, to Miss Ellen Hughes, a native of Ireland. They have four children: James, Anna, Thomas and John. Their residence is at 5303 Wabash avenue.

Thomas B. Roy is an experienced stonemason for the Young & Farrell Diamond Stone Sawing Company. He was born in Scotland, July 9, 1852, and is the son of James and Elizabeth (Buchan) Roy. His father was also a native of Scotland, and now lives in Dundee. He was born in 1823, and by occupation was a farmer. The mother was also a native of Scotland, born in 1816, a daughter of John Buchan, who was a soldier in the English army at Waterloo and Corrunna, and color sergeant of his regiment. He also participated in the impressive ceremonies of the historical burial of Sir John Moore, which occurrence was rendered memorable by the celebrated poem commencing, "Not a drum was heard, not a funeral note," etc. He lived to be a very old man, dying at the age of nearly ninety years, in 1879. Mr. Roy is the fourth of six children born, of whom four are yet living. He was educated in his native land, and upon reaching a suitable age was put to service to learn the trades of stonemason and stonemason. He came to the United States in 1872, and for ten years resided in Philadelphia, but in 1882 came to Chicago, and since that date has been connected with the Young & Farrell Sawing Stone Company. He was married, in 1874, to Miss Isabella Wilson, a native of Philadelphia, born in 1853. They have six children: Julie, James, Thomas, William, Robert and John. He resides at 535 Burling street. He is a member of the Knights of Honor, Lakeside lodge No. 1286, and of Lincoln Park Congregational church, and is one of the young, active, able and prominent business men of Chicago.

George A. Fuller, president of the George A. Fuller company, was born in Templeton, Worcester county, Mass., where he was partially educated, finishing at Phillips academy in Andover. In 1869 he went to Worcester and entered an architect's office, where he served an apprenticeship of three years. At the termination of this period he went to Boston, and became connected with Peabody & Stearns, noted architects of that city. There he remained, perfecting himself in this notable art, acquiring a profound knowledge of the principles of building, for a period of five years. So well had he succeeded in grasping the principles of the art that the firm placed him in charge of their office in New York city, and at the same time he was given an interest in the business, and in this capacity he was associated with those gentlemen for three years. In April, 1883, he came to Chicago, and formed a partnership with C. E. Clark, under the firm name of Clark & Fuller, which firm was in active and successful operation for three and one-half years. Succeeding this, he continued the business alone until March, 1890, when the present corporation was organized with Mr. Fuller as president and John M. Ewen, vice president and general manager, R. H. Wisdom, treasurer, and L. P. Schriver and L. G. Wells, superintendents, all named being at that time

directors. This firm of builders is one of the largest in the West. Mr. Fuller and the corporations above mentioned have done a large amount of most excellent work throughout Chicago, and have constructed the Tacoma, the Rand-McNally, the Pontiac, the Monadnock, the Kearsarge, the Caxton, the Woman's Christian Temperance Union—the Temple, the Fair, and Clark & Fuller, the Chicago Opera house and Union Club buildings, besides many of the finest residences here. Mr. Fuller did the extension of the Home Insurance building, and the interior of the Rookery. His operations have not been confined to Chicago, but have spread out into the surrounding cities. Clark & Fuller built the St. Louis club house in St. Louis, and Mr. Fuller has built other buildings in the different cities. Mr. Fuller is a member of the Builders & Traders' exchange, the Carpenters & Builders' association, and the Master Masons' association.

John M. Ewen, vice president and consulting engineer of the George A. Fuller Company, building contractors, was born in New York, September 3, 1859, and was educated at the Stevens Institute of Technology, class of 1880. He ranks as one of the ablest engineers and business men connected with the building interests of Chicago. After completing his education, he was connected with the J. B. & J. M. Cornell Iron works, in New York, for three or four years, but in 1885 came to Chicago, and soon after was engaged as engineer for W. L. B. Jenney, architect, with whom he remained about a year. He afterward became the engineer for the celebrated firm of Burnham & Root, architects, and for several years, ending with May, 1890, was their general manager. Since then he has become the general manager and consulting engineer of the George A. Fuller Company, builders. He is eminently fitted for the work, and has a promising career before him. He was married, in 1888, to Miss Grace Patterson, daughter of Rev. Robert W. Patterson, D. D., LL. D.

L. G. Wells, of the George A. Fuller Company, was born in Lower Canada, April 24, 1851, and had the advantage of but a common-school education. His parents were Alphonso and Adelia (Marcotte) Wells, both of Canadian birth, the father of Scotch and English origin, and whose ancestors were among the early settlers of Brattleboro, Vt., the mother of French origin. Alphonso Wells was a professional surveyor, and did extensive work in this line for the Canadian government. He is now a resident of Chicago. There are three sons, the subject of this sketch being the eldest. The others are Thomas A. and Oliver A., both of whom are with the George A. Fuller Company, occupying positions of responsibility. Meeting with business reverses in the year 1866, Alphonso Wells decided to move to the United States, and located in Lebanon, N. H. It was necessary for L. G., then but a boy of fifteen years, being the eldest child, to assist in making a new start, and he remembers with no little satisfaction the first few dollars he earned, which was done in assisting an old Irish character of the town in making mortar and tending masons. Thrown in contact with building mechanics, he resolved to learn the building trade, and to this end worked on buildings during the summer and in the winter worked in a cabinet shop, becoming an expert in making fine hardwood work. At the age of eighteen years he had so familiarized himself with the building business that he was given charge of all work upon which he was engaged and was directing men who

had spent twenty years of their lives at this work. In 1872 he decided that he was laboring in too small a field, and left New Hampshire, going to Lowell, Mass., and entering the service of one of the large cotton manufacturing corporations of that city. He was soon engaged erecting cotton mills, building residences, etc. Not being satisfied with the salaries paid by these corporations, in 1880 he decided to turn his attention to larger building operations, and learning of the projected building up of Long Beach, on Long Island, N. Y., he went to New York, and was engaged by C. B. McLean, then superintendent of the Long Island railroad, to assist him in the gigantic undertaking which was so successfully carried out, which was the construction of three miles of double track, necessitating the building of three draw bridges, the building of a mammoth hotel, numerous cottages, a thousand bathinghouses, a depot, an engine house, boardinghouses and a gashouse, and the grading of miles of walks and the final opening to the public of this magnificent beach in ninety days from date of breaking ground. Mr. Wells considers this the best schooling he ever had, and to his association with C. B. McLean does he attribute much of his building knowledge and success. After the completion of this work, Mr. Wells returned to Massachusetts, to enjoy a much needed rest, and while there received a letter from his old general, C. B. McLean (who had accepted a position with the Baltimore & Ohio Railroad Company), asking him to come to Baltimore to assist in the building of a large grain elevator, and June, 1881, found him engaged with a force of four hundred and fifty men in the construction of one of the largest grain elevators on the western continent. Completing this, he erected a warehouse for the Baltimore & Ohio Railroad Company. The remarkably short time in which this warehouse was built coming under the notice of S. H. & J. F. Adams, large contractors in the city of Baltimore, they engaged him to go to Altoona, Penn., to superintend the construction of a large building for the Pennsylvania railroad company. Upon the completion of this work, he was very highly commended by the Pennsylvania railroad company, and inducements were held out to him to remain with the company, but not having a fancy for railroading, and not wishing to give up his idea of doing large work, which had been strengthened by reading glowing accounts of the buildings being erected in Chicago, he determined to visit this city. Coming here a stranger, he sought and obtained employment with the W. E. Frost Manufacturing Company, beginning with the concern in the ordinary capacity of other mechanics by the day, but showing such ability and experience that he was repeatedly and steadily promoted, until he became outside superintendent for the company. Becoming dissatisfied with some of the management connected therewith, he accepted a position as superintendent with Burnham & Root. His connection with these noted architects and builders proves the high esteem in which his experience and capabilities had come to be held, but this employment did not call forth the activity which had become second nature to Mr. Wells, and he decided to return to the more active part of the building trade. He then took a trip West, with the idea of possibly locating in business there, but at the expiration of three months, not having seen a satisfactory outlook, he returned to Chicago. He has since been connected with the George A. Fuller Company, as superintendent. In 1890, when this stock

company was formed, he was made a member of the company. His duties are to superintend the construction of buildings, a position involving great responsibility and no little perplexity. He is a member of the Masonic fraternity.

Victor Falkenau learned the business of contracting in the office of Marc Eidlitz, one of the ablest and most extensive contractors of New York city. Mr. Falkenau came to Chicago in 1882, and the following year began operations independently, and has thus continued successfully until the present. He built the Haymarket theater, the power house for the West Chicago street railway company, the Bee Hive store building, the fine propagating house for Lincoln park, and prepared the plans for the boulevard tunnel at that park, a very important piece of engineering, as well as architectural skill. In addition to this noteworthy work he has erected many of the best residences and flat-buildings of the city, and is one of the most successful business men connected with the Builders & Traders' exchange, of which he has been a member since 1883, his name being the second on the list of membership of that organization. He was born in New York in 1859, and there first attended the public schools, but later graduated from the university of New York in the class of 1877. Associated with him in business is his brother, Louis Falkenau, one of the most distinguished of the young engineers of the city. He is a graduate of Cornell university in the class of 1873. He came to Chicago in 1876, and for nine years had charge of the advance service and construction of the Chicago, Rock Island & Pacific railroad. He is also chief civil engineer for the construction of the Chicago, Kansas & Nebraska railroad, and has officiated in the same capacity for the Chicago & Western Indiana, the Missouri, Pacific & Erie railroads. The brothers are well educated, and have bent all of their energies upon, and concentrated their interests in, their business, which has brought them their well-merited success.

The following handsome structures were erected by Olof Hero, builder and mason contractor, much to his credit and honor: The residence of Thomas E. Wells, at Vineennes avenue and Forty-seventh street; the fine residence of Mr. Woodruff, at the corner of Forty-ninth street and Kimbark avenue; the residence of R. R. Donnelly, at Forty-Sixth street and Woodlawn avenue; the store and flat-building at One Hundred and Fifteenth street and Kensington, Ill.; the Catholic convent in south Chicago; a Catholic church at Hammond, Ind.; Hoffman's residence on West Monroe street; a three-story apartment building at the corner of Marshfield avenue and York street; five residences on Archer street near Belmont avenue; a residence for Mr. Eggerman, at Jefferson avenue and Fiftieth street, known as Eggerman's block; residence of E. B. Carter, at Jefferson avenue and Fifty-fourth street; the Woodlawn clubhouse; the residence of E. E. Ellington, at Edgerton avenue and Sixtieth street; Wilbur's block and residence, at Sixty-third street and Woodlawn avenue; Conrad Talge's block, at Sixty-third and Halsted streets, besides many other buildings that have become well known for the substantial manner in which they have been constructed. As a thorough and skillful workman, Mr. Hero has not his superior in the city of Chicago, and his extensive operations have been conducted with skill and executive ability that rank

him as a master of his profession. His buildings show that solid and thorough workmanship so necessary to advancement, promote and maintain the reputation of a contractor and builder, and that he has become distinguished in his calling can but be acknowledged when the evidences of his handiwork are pointed out. He is a native of Sweden, born in 1852, and in the land of his birth he was given a public-school education. At the age of sixteen years he began serving an apprenticeship at the mason's trade, beginning life for himself as a journeyman at the end of four years, working for some time at blast furnace building in Sweden, Finland, Norway and other countries, seven years being spent in the last-named country. In 1881 he came to America, locating the same year in Chicago, and for about eighteen months thereafter worked as a fireman in the South Chicago rolling mill, after which he began working at his trade, and commenced contracting in 1883. At this time his capital was very limited, it being only what he could save from the wages he had been earning, but by practicing considerable self denial and by bending all his energies to the successful pursuance of his calling, he began gradually to accumulate means, and by his own perseverance has built up his present large trade. He employs, on an average, thirty competent workmen, but personally superintends all the work done, a secret, no doubt, of his success. His frugal habits, energy and perseverance have stood him in good stead during the active life he has led, and he now has no need to deny himself luxuries or pleasures, for, as a reward for his early toils, he has accumulated an abundant share of this world's goods. He is a member of the Builders & Traders' exchange, of the Master Masons' association, of the A. F. & A. M., and of Alliance lodge No. 201, Knights of Pythias; is a charter member of the Improved Order of Redmen, Wabash tribe No. 92, at Woodlawn Park, and a charter member and past officer of the Linnea organization No. 1, being also a past officer of the Royal League and a charter member of Amity council No. 13. He was married in Sweden to Miss Louisa Hultman, by whom he has seven children. His residence is at 5487 Ellis avenue, Hyde Park.

A. Collender is a practical mason, and has been connected with that trade since his youth. At an early age he began learning his trade in Stockholm, and during the period of his apprenticeship he attended a trade school in the same city. After completing his term of service he worked at the trade in Stockholm for about three years, but in 1880 came to Chicago and was for some time employed at the mason's trade by the day, by Anton Carlson. In 1883 he began contracting on his own account with A. Lanquist, which partnership continued with excellent success until 1888, during which period the firm constructed some substantial buildings in different parts of the city. Since 1888 Mr. Collender has been alone in business, and has enjoyed a large trade and given the best of satisfaction. He is a careful, painstaking and industrious workman, and no job leaves his hands except of the best character and finish. He erected the warehouse of John B. Morris, at the northeast corner of Jackson and Market streets, seven stories high; Judge Altgeld's block at the southwest corner of Market and Van Buren streets, eight stories high; C. F. Rice's warehouse, at 204 to 208 Green street, five stories high; the Morris residence, at the corner of Polk street and Ashland

boulevard; John M. Smythe's new building on Madison street; the Wilson warehouse, at Canal and Adams streets, and many other structures equally as large and difficult, and all in keeping with the present advanced state of the building art. From his long experience and consequent acquaintances with the details of his trade, he is competent to construct any building, no matter how intricate or difficult. He was married in 1882 to Miss Christina Swanson, a native of Sweden. Five children have been born to them. Mr. Collender is a member of the Builders & Traders' exchange, is a member of the A. O. U. W., and is essentially a self-made man. At an early day he was thrown upon his own resources, and by reason of his steady habits, ability, industry and superior intelligence, he has become one of the best mason contractors of the West. He was born February 27, 1857, in Stockholm, and in that city was educated and reared.

Oscar E. Anderson & Co. are doing a good business of contracting and building in Chicago and suburbs, and have an office at 177 La Salle street, room 39. Mr. Anderson is a member of the Builders & Traders' exchange. He began learning the mason's trade at the early age of twelve years, serving his apprenticeship with one P. Peterson, upon the completion of which he worked as a journeyman until about seven years ago, since which time he has been contracting on his own responsibility. He built the Second Swedish Baptist church at 3020 Fifth avenue, in 1886; several of the fine residences on Grand boulevard and Michigan avenue, a large flat and store building on Thirty-first street, besides many others equally noteworthy. He is a competent, honest business man and merits the large patronage which he is enjoying. He was born in Sweden, June 20, 1863, and is the son of Andrew and Mary Anderson, both of whom were natives of Sweden, and came to the United States about fifteen years ago, and settled in Rockford, Ill. The father was for many years a skillful and active carpenter and contractor, and stood high in the old country. Oscar E. Anderson came to the United States in 1875, and lived for a time with his parents at Rockford. He was married July 15, 1884, to Miss Alma Christianson. They have one child, Lillie. Mr. Anderson is a staunch republican.

John Harmon is one of the best known mason contractors in Chicago, and during the ten years of his residence here the following admirably constructed buildings stand as monuments to his ability: The handsome residence of Frank M. Wilson at Fifty-third street and Woodlawn avenue, and the fine residence of W. H. Coolidge, at 2917 Groveland Park avenue, both built in 1885; Woodbridge hall, at Cheltenham, in 1886; Blake hall, at Morgan Park, in 1887; Liberty hall, at South Chicago, in 1889; the residence of Dr. Waxham, on Grand Boulevard near Thirty-sixth street; the flat buildings for Lyman Riley, at Fifty-second street and Lake avenue, and for H. G. Hoffman at the same place; a beautiful residence for Captain Butlin, on Washington avenue near Fifty-first street; the South Park Congregational chapel; the new addition to the Hyde Park water works, with the largest chimney connected with the works, besides numerous other business buildings and residences throughout the city and suburbs. He is unquestionably one of the ablest builders of Chicago, if not in the West, his long continuance at his work, his fixed industrial principles and his knowledge of his trade

having won for him the highest rank. He is a native of Wales, born May 5, 1857, and in the country of his nativity he received his education. At the age of sixteen years he began learning the builder's art, and served an apprenticeship of five years, becoming thoroughly familiar with the details of his calling. In 1879 he came to the United States, and first located at Youngstown, Ohio, where he worked as a journeyman at the mason's trade until coming to South Chicago in 1881, continuing his trade here until 1884, since which time he has been contracting on his own account, attaining a proficiency second to none in the city. He has been the architect of his own fortune, and his worth and excellence of character are well known. He is a member of the Builders & Traders' exchange, the Triluminar lodge No. 767 of the A. F. & A. M., at South Chicago; the I. O. O. F., at South Chicago; the Apollo Musical club of Chicago, and is a charter member of the First Baptist church of South Chicago, of which he was the first church clerk and a member of the first board of trustees. He has also been chorister of that church since the founding of the society in South Chicago. Politically he is a republican. He was married in 1884 to Miss Hattie M. Tobias, who was born in Plainfield, Ill., and has one child, Albert M. Their residence is at 7827 Bond avenue, Cheltenham. Mr. Harmon's father was accidentally killed in the coal mines at Tredegar Mon, in Wales, in 1860. His mother came to the United States in 1882, and died at Cheltenham, Ill., in 1887.

Ole Johnson, mason contractor, resides at 386 West Ohio street. He came to Chicago in 1879 from Norway, where he was born April 28, 1854, and where, at the age of fourteen years, he began learning the mason's trade, serving an apprenticeship of five years. He received ten cents per day for his first year's work; twenty cents per day for the second year; forty cents per day for the third year; \$1.08 per day for the fourth year, and \$1.50 per day for the fifth year. At the end of this time, having thoroughly mastered every detail of the business, he engaged in contracting for three or four years, and upon coming to Chicago worked by the day for some time, then spent three and a half years as foreman for the firm of Lund & Gilbert, beginning in 1881. Since about 1884 he has been contracting for himself, and the substantial and workman-like manner in which his buildings are constructed bespeak him a skilled and capable workman. The following buildings are the result of his ingenuity and labor: The residence of Capt. G. Gunderson, at the corner of West Ohio and Bickerdike streets, which cost \$17,000; the Norwegian St. Paul church, on North avenue between Shober and Leavitt streets, which cost \$20,000; three residences for Mr. Roos, on Astor street; a fine residence for John Miller; Mrs. Holst's residence, on Erie street near Milwaukee avenue; the buildings for John Clifford, from 635 to 641 Sedgwick street near Lincoln avenue; Ole Johnson's residence and buildings, at 382 to 386 Ohio street; No. 388 on the same street, for Andrew Searum; besides numerous other handsome and substantial structures. Mr. Johnson's residence, at 386 Ohio street, is one of the finest on the west side. Since the age of nine years Mr. Johnson has made his own way in life, and the success which has attended his efforts is doubtless due to his persistent and honest endeavor. He has been a member of the Builders & Trader's exchange for three years, and is a member of the Scandinavian Workmen; and

owing to the honorable business methods which he has practiced during his business career, he is deservedly popular with the building fraternity. He was married in 1872 to Miss Walburg Johnson, a native of Norway, born April 12, 1853, by whom he has four children: Esther, Jennie, Annie and Twygue. His parents are John and Mary (Johnson) Oleson, but on coming to this country, not wishing his name to be Ole Oleson, he took his father's surname, also his mother's, and hence is Ole Johnson.

Louis Berg is a successful mason contractor and a member of the firm of Carlston & Berg. He is a native of Norway, born April 1, 1858, and is a son of Carl and Caren Berg, also natives and still residents of Norway. Mr Berg was educated in his native land, but first acquired his knowledge of the building trade in Germany, where he was for some time a student at the School of Building Arts. Having secured a good knowledge of the mason's trade and the art of constructing buildings, and feeling himself qualified to compete with any one in this business, he came to the United States in 1882, locating directly in Chicago, and here he has since resided and made his way to success. Upon his arrival here he could not speak the English language and had no money in the world, but this did not disconcert him, a good knowledge of his trade and his energy and enterprise carrying him through. He at once secured work, and for three and a half years labored by the day, and succeeding this was for one and one-half years superintendent for Joseph Downey, but since that date has been a member of the firm of Carlson & Berg. His industry, determination and faithful attention to business have made him one of the best operators in his line in Chicago. For two years he has been a member of the Builders & Traders' exchange, and he is also a member of the Master Masons' association. His residence at 508 West Huron street was recently erected. He was married, in 1883, to Miss Alice Peterson, a native of Norway, born in 1863. He is a self-made man and one of Chicago's best citizens of foreign birth.

J. A. Gustafson is a successful contractor for stone and brick pavements, and has for a number of years done a lucrative and important business in this line. He was born in Sweden April 5, 1842, and was educated in that country. His father, Daniel Gustafson, was also a native of Sweden, where he died in 1870. He was a farmer and an honest man. J. A. Gustafson came to the United States in 1865 and located in Chicago. He worked here at first for some time by the day, but soon accepted a position as foreman for Thomas Mackin and continued in that responsible position for ten years. Since 1885 Mr. Gustafson has been contracting independently and has had a steadily increasing trade. His work is at all times reliable and will stand the closest inspection, and he can be relied upon by all who require his services. His residence, at 1741 Wrightwood avenue, was erected in 1887 at a cost of \$15,000. He was married January 15, 1872, to Miss Mina Carolina Hanson, who was born in Sweden in 1858. They have one daughter, ten years of age. Mr. Gustafson is a member of the Foresters, and is an upright and useful citizen. He has made his own way in life, and owes his advancement to no man but himself, his honorable business habits and his good name having gained for him the success he has achieved.

Samuel Halls, contractor and builder, No. 293 Claremont avenue, is one of Chicago's progressive young men. He was born in Middlesex county, Ontario, in April, 1859, to Samuel Halls, who is also a builder, and has carried on business successfully in Canada for forty years, having erected many of the fine buildings in Middlesex and Huron counties, but who is now, at the age of seventy-two, living, retired from business, in the enjoyment of the accumulations of his earlier years. Samuel Halls, the immediate subject of this sketch, is the second son in a family of four sons and four daughters, and in the public schools of Huron county he received his initiatory education. He learned his trade with his father and uncle, serving a five-year apprenticeship, but since he attained his nineteenth year he has been in business for himself, and is now a practical and successful builder. In August, 1880, he came to Chicago, and here formed a partnership with his brother James, which lasted for two years, since which time Samuel Halls has carried on business alone, being principally interested in the erection of residences. He has built several churches, and has also put up some fine store buildings on such streets as State, Madison, Wells and Halsted. He draws his own plans and superintends his own work, having under his employ fifty to sixty men at times, and on an average puts up from fifty to one hundred buildings annually. He does a great deal of masonry, this being his particular branch of the building business. He has a prosperous business, and has all the trade he can properly attend to. He is a member and a director of the Western Avenue Building & Loan association. December 24, 1884, he was married to Miss Drucilla A. Brisco, by whom he has two children: Allen S. and Bessie.

Aaron Jay, mason contractor and engine and boiler setter, office 28 South Canal street, residence 25 West Fortieth place, near Park avenue, was born in England in 1859, a son of James Jay. He learned the trade of a bricklayer and mason in England, and was a contractor in Kingswood, Gloucestershire, for about four years. He came to Chicago in June, 1881, and during the past five years has been well known on the west side as a contractor and expert engine and boiler setter. Of the last-named branch he makes a specialty. He has set engines and boilers in many large buildings in the city, and at the present time, in addition to his other contracts, he is doing the engine and boiler work in Marshall Field's wholesale and retail stores. As a building contractor he has not operated extensively, but his work has been of such a character as to commend him to all who have observed it. He is one of the numerous class in Chicago who have made their own way by sheer force of character and well-directed effort, and such success as he has attained is the reward of honest merit. Socially he is genial and popular, and he is a member of the Royal Arcanum. He was married in 1876 to Miss Jane Davis, of Kingswood, England, and has five children.

J. J. Monaghan came to Chicago in 1886, and since the following year has been engaged in contracting. He is the only man in Chicago who makes a specialty of erecting bowlder stone buildings. This stone was first used in Chicago by Ed. E. Ayer, Esq., in 1886, in the construction of his residence on Banks and State streets. The succeeding year, through the influence of J. L. Silsbee, architect, it was used in the construction of a building in Lincoln park. Since that time it has become an important factor in the Colonial style of building.

Among the many buildings constructed of this stone are the First Baptist church of Englewood, the Methodist Episcopal church of Edgewater, the Palm house in Lincoln park, the residences of Judge Jamison, M. M. Jamison, Dr. Lucas Williams, Charles Lasher, A. F. Shuman, A. C. Bartlett and Arthur Orr, the latter in Evanston. A remarkable fact connected with this stone is that it was until very recently thought to be almost worthless in the construction of buildings, and about the only use to which it was put was in fences by farmers. The inventive genius of the present day soon found it a desirable material for ornamental house construction, and accordingly the last few years has seen it brought rapidly and steadily into extensive use. The merit of this stone for building purposes was first brought into prominence by H. H. Richardson, the eminent architect, and used by him in the Gate Lodge of the Ames estate at North Easton, Mass. In this structure it is interesting to note that the bowlders were used as originally found, and were not broken. It was considered impracticable to break them, until J. J. Monaghan demonstrated that it was not only practicable but made a stronger structure, and this fact is abundantly proved by the substantial character of the buildings he has erected. He has an extensive business in his specialty, and his straightforward methods have won for him the confidence of the people. He was born in Troy, Wis., June 22, 1855, was educated in the public schools of Wisconsin, and at the age of eighteen years, at Lake Geneva, Wis., he began learning the mason's trade, and, after its completion, he worked at that trade in his native state until he came to Chicago. He is a member of the Builders & Traders' exchange.

George Thomson, mason, builder and contractor, office 158 La Salle street, box 548 Builders & Traders' exchange, in addition to his regular contracting does all kinds of jobbing and repairing in stone, brick and plaster. He is a native of Huntly, Aberdeenshire, Scotland, born November 26, 1846, and in that country learned his trade thoroughly, having served an apprenticeship of four years; succeeding the completion of his term, and as journeyman, he worked actively at his trade in different places in his native country, but principally in the city of Edinburgh until 1882, when he came to the United States, and for a brief period resided at New Brighton, Penn., but in the fall of 1882 came to Chicago, and soon afterward entered the employ of the Young & Farrell Diamond Stone Sawing Company, with which he remained until 1888, in the capacity of second foreman of the stonemasonry department. In 1888 he began contracting on his individual account, with office at his present location, since which date he has rapidly extended his operations, until he is recognized now as one of the best qualified and most able and successful contractors in the city. He did the mason work on the addition to the fine house of N. K. Fairbanks, on Eighteenth street and Michigan avenue, two large apartment blocks on Calumet avenue and Twenty-fourth street; the warehouse for the P. C. Hanford Oil Company, at Sixteenth street and Wentworth avenue; the large soap factory for Thomas Dugall & Sons, at Hickory avenue and Division street; an elegant three-story-flat building for Mr. Gardner, at 1543 West Monroe street, and many other buildings throughout the city, noted for their substantial character and beauty. He is a practical mechanic, is capable of handling large contracts satisfactorily, and is doing a large business

in his line. He was married in Scotland in 1874 to Miss Elsie Ross, who ten years later died in this city, leaving one son, who is now being educated in Chatham, Canada. Mr. Thomson is a member of the Builders & Traders' exchange, and of the Chicago Masons & Builders' association, as well as of the St. Andrew's and the Caledonian societies. His younger brother, John, was born in Scotland in 1860, was educated there, and later learned the drygoods business, having been connected with that calling for nine years in the city of London, serving as bookkeeper in one of the largest drygoods houses there. In 1888 he came directly from London to Chicago, and for about two years was in the employ of Marshal Field & Co., but since 1890 has been bookkeeper and clerk for his brother, George Thomson.

One of the important branches connected with the building interests is that of cleaning brick and stone fronts, and in pursuance of his calling John Henry Miller is an expert. He was born in Britlington, Yorkshire, England, October 2, 1843, the son of Charles A. and Elizabeth (Warlow) Miller, both of whom were natives of England. The father was frozen to death while on a voyage to Norway, April 8, 1866, being at that time about forty-six years of age. The mother died in her native land in 1884. John Henry Miller, their only son, was educated in England, and later attended school in Chicago, having come to the United States in 1862, while in his early manhood. The war of the Rebellion was in full progress in this country at that time, and soon after reaching this country Mr. Miller enlisted in the United States navy, in which he served for some three years. March 29, 1866, he came to Chicago, and, off and on, for about seven years he was in the employ of Messrs. Gindele, but also worked independently at times from the year 1869. His business consists of cleaning and pointing, also general repairing, and in this line of work he is also exceptionally skillful, for he makes a specialty of the most difficult and dangerous buildings. He cleaned and pointed the new state house of Indiana, the Grand Central depot of Indianapolis, the court-houses at Peoria, Bloomington and Chicago, Ill., the Auditorium, Tacoma, Claxton, Pontiac, Phœnix, Home Insurance and the Chicago postoffice buildings, besides nearly all the other large structures of the city. Mr. Miller is one of the best mechanics in the West, which is saying much in his favor, and is essentially a self-made man, for from boyhood he has made his own way in the world. He is a member of the Builders & Traders' exchange, of which he was one of the organizers, is a member of Covenant lodge No. 526 of the A. F. & A. M., and in his political views is a democrat.

CHAPTER XX.



CARPENTERS AND BUILDERS.

THE active life of Amos Grannis covers the entire period of the history of Chicago. He was born at Attica, Genesee county, N. Y., April 17, 1825, a son of Samuel Johnson and Clarissa (Ford) Grannis. The latter died when he was four years old. His father, a native of Fair Haven, Conn., moved thence to Marcellus, N. Y., and thence to Batavia and Attica, where he worked at his trade of tanner and currier. In the summer of 1836, on August 25, he left Attica for Chicago, accompanied by six children. From Buffalo to Erie, Penn., they traveled by steamer, and at Erie they were joined by their eldest son and brother and his wife and infant child. From Erie they proceeded to Detroit on board the steamer Governor Marcy, but the passage was so rough that they determined to make the balance of the journey overland. A man who combined the occupation of farmer and tavern-keeper was employed to take the party of ten from that point to Chicago. The journey over the rough corduroy roads and sand hills of the then new country was not a altogether pleasant experience, but they reached the then future great city in safety September 25, 1836, having been a month en route from Attica. The statement will scarcely be credited by some that Mr. Grannis on his arrival here had only \$10 with which to supply the necessities of the whole party, but it is true. No one would now think of going on such a journey so illy provided, but these were the pioneer days, and the little party were pioneers and were contented and hopeful. A hearty welcome was extended to them by a daughter of Mr. Grannis, who had been a resident here about a year, and his son Henry next day conducted them to a land claim he had entered two years before, which adjoined Mansell Talcott's, now in the town of Maine, and located about half a mile from the Desplaines river. There the family lived for two years in a log house, one other house only being in sight. The experience so common to pioneers hereabout was theirs, and they were frequently kept awake by the wolves which made night hideous around their cabin. By the expiration of that time the subject of this sketch was eleven years old, and young as he was he was kept pretty busily at work on the farm of his brother Henry. His educational advantages were limited. Three miles from his home, over the snow-covered and wind-swept prairie, was a rude log schoolhouse, and there, during three months in each of three successive winters, he attended such school as was taught, and had no other opportunities for schooling after he was fourteen years old, though

he had all that came in his way when not busy with farm labors at which he was employed for several years thereafter. The time for his leaving home came at length, and he went to Green Bay, Wis., and there worked several months for the Peshtigo Lumber Company, and then came back to Chicago, and, under Boggs & Webster, began learning the trade of carpenter and joiner. With that firm he remained three years, receiving \$30 the first year, \$35 the second year and \$60 the third, and then found employment with Peter L. Updike at \$1.25 per day. That was then current wages, and his board and lodging cost him \$2.50 per week. Forty years ago, in 1851, he began business for himself. His beginning was small indeed, but he was determined to get on in the world and devoted all his ingenuity and bent all his energies to that end. He first set himself to the task of securing a home, and it is a fact of no little historical interest that he leased a lot on Adams street, part of the present site of the government building, and built thereon a cottage which cost him \$800, of lumber which cost him \$6 to \$17 per thousand feet. His business operations were extended with a success which, he judged, warranted him in making certain investments, which later endangered his financial standing; but he did not hesitate to sacrifice a part to save a part and kept his credit good in the business world, and, paying a hundred cents on every dollar he owed, he pressed forward, working himself into a large business for that time, and took a prominent position as a contractor and builder. Architecture was then in its infancy in Chicago, primitive if not crude. It was the era of balloon frames and plain brick structures. J. M. Van Osdel, Ed. Burling and W. W. Boyington were the principal architects, and about the next one of prominence was Asher Carter. During the period 1854-60 the style and character of buildings changed materially in the direction of the artistic. The war checked building operations for several years. With the revival of building, brick was still the principal material used, but the structures were more ornate and more in keeping with the general prosperity. Then came the fire and the later era of cheaply and quickly erected buildings of all kinds, and later still the great building era of modern Chicago, unsurpassed in the history of any city in the world, which ushered in adaptations of the Renaissance and the Romanesque among other partially old styles, and the modern style now famous as Chicago steel construction and exemplified in the high office buildings of this and other cities. Before the fire Mr. Grannis had erected some of the most notable buildings in the city, among them the Rock Island depot, Trinity Methodist church, Grace Episcopal church, the old Nixon block, the Exchange block and others of like importance. Like about every one else in Chicago, Mr. Grannis suffered severely as a result of the conflagration, but he participated in the great demand it caused upon those of his calling. Among the structures he has erected since the fire may be mentioned the Rock Island depot (rebuilt), the American Express building, the Grannis block, St. Caroline's court, the Calumet block, the fine residences of John B. Sherman, W. F. Tucker, George E. Adams and others, and a large amount of suburban work, his operations in the latter line at Riverside amounting in one year to \$80,000. Mr. Grannis has participated in the making of the history of the building interests of Chicago, having literally borne a part in the erection of every kind of structure erected

here from the humble log cabin of the pioneer days to the modern sky-scrapers which will greet the eye of the pilgrim to Chicago in 1893. He has been active otherwise in promoting all beneficial public interests. He was one of the organizers, and is treasurer of the Chicago Mechanics' institute; he was a charter member, and was for several years treasurer of the Builders & Traders' exchange, and he is treasurer of the Masonic Building & Loan association and a director of the Globe National bank. His connection with masonry is long and has from the first been prominent, he having held many of the most important offices in the order. He was master of Lodge No. 508 for three years, and was advanced through Chicago chapter No. 127, having held the office of treasurer in these bodies for fifteen years without intermission. In 1868 he became a member of Apollo Commandery No. 1, Knights Templar, and of Oriental consistory L. P. R. S. and Scottish rite. In 1881 he was chosen eminent commander of Apollo commandery No. 1. He is now a director and the vice president of the Masonic Fraternity Templar association. For several years he was trustee and chairman of the executive committee and vice president, and is now treasurer of the Northwestern Masonic Aid association, the largest of its kind in the world, having more than fifty-five thousand members. In politics Mr. Grannis is a republican, and has acted with that party since its organization. He was alderman representing the Fourth ward in 1878-80. In 1886 he was elected a member of the reform board of county commissioners, and served an unexpired term of three months, and at the next regular election, in November, he was reelected to succeed himself. The ancestors of Mr. Grannis were Scotch Highlanders and came to America early in the seventeenth century. The marriage of Edward Grannis, of Hartford, Conn., to Elizabeth Andrews, of Farmington, Conn., May 3, 1654, and the birth of their son Joseph, March 31, 1657, are matters of record. More than a hundred years later another Edward Grannis is enrolled as one of "the citizens of Hartford who declared for liberty and independence in the year 1775." He enlisted in the cause of the colonies, and died a patriot soldier's death near the close of the war, and his widow survived him until she was ninety-four years old. Their children were a daughter, and one son, Samuel Johnson Grannis, the father of Amos. Mr. Grannis' eldest brother, Samuel W. Grannis, who with his wife and child, accompanied his father to Chicago, is yet living at 1033 West Jackson street. A few years after this arrival of the family, Mr. Grannis' sister, Amanda, married Elisha D. Lane, who leased the farm of Abram Gale near Oak Point, where Mr. Grannis' nephew, Hon. Albert Grannis Lane, the present popular superintendent of schools, was born. On Christmas eve, 1850, at the age of twenty-five, Mr. Grannis married Miss Jane Taylor, a daughter of Mrs. Mary Taylor, now living in Mr. Grannis' family aged eighty-eight years. The marriage took place in a house on Lake street owned by Messrs. Mosely and McCord, who were known generally in those days as two rich bachelors, and who boarded at the Tremont house; and the officiating clergyman was Rev. Dr. Tucker, of the Baptist church. His marriage has been blessed by the birth of six children. While not a member of any church, Mr. Grannis has always attended and aided the Methodist church, and is now a trustee of the Trinity Methodist Episcopal church, Rev. Dr. F. M. Bristol, pastor. His residence is at 2916 Indiana avenue.

Jonathan Clark is one of the most noted builders of the city and the largest contractor and owner of real estate, which he has improved with substantial business blocks, in the business portion of the city. Mr. Clark was born in the county of Norfolk, England, May 18, 1828, and when a mere lad immigrated to America, locating in Chicago, in 1848. In 1849 he commenced to learn his trade with Sollitt & Updike, whose shop was located on Randolph street, between Clark and Dearborn. After a service of three years with this firm, he became a journeyman, and soon after embarked in contracting for himself, and since that period has been one of the most active and successful factors in building up this great city. His first partnership was as an assistant with his brother, Thomas, who had followed him from England, and the firm of Jonathan Clark & Brother was one of the most prominent, and continued doing a prosperous business up to the great fire of 1871. During this association they erected Farwell hall, the north side Water Works building, the Academy of Design, and many more prominent buildings at that period. At the time of the fire they had many buildings in the process of erection and lost heavily by that great disaster. Since the fire Mr. Clark has continued business alone, and many of the prominent and handsome business blocks stand as fitting monuments to his skill, while his good judgment as to the best locations, has made him a man of large and deserved wealth. While Mr. Clark has erected for others many valuable and imposing structures, his best and most notable work has been the improving of the real estate, which his foresight led him to invest in, in the business portion of the city. Among these buildings we mention: The Brother Jonathan building, on Sherman street opposite the Board of Trade, which is described in detail in another portion of this work; the four-story-and-basement building on Adams and State streets, now occupied by the Leader; the five-story-and-basement building at 58 and 60 State street; the four-story-basement building now occupied by Wanamaker at 145 State street; the Peoples' theater; three six-story buildings at 249 to 255 State street; the Metal Workers' building at 43 to 49 Canal street, which is a five-story-and-basement building; the Manufacturers' building on the corner of West Randolph and Canal streets, which building is one of the most substantial in the city, and is also five stories and basement. Besides these buildings Mr. Clark owns many other store and flat buildings, and is at the present time erecting eight more four-story buildings on State street and Wabash avenue, and has erected and sold many other valuable pieces of property. He has always had great faith in State street and Wabash avenue property, and has advised his friends to invest upon those streets, while his own faith has led him to improve such property as came into his hands as the demand developed. He has a large holding of valuable property upon those streets which he will improve in due time. The first contract executed by Mr. Clark was a residence of Deacon Samuel Hoard, which still stands, after forty years, at the southeast corner of Van Buren and Morgan streets. Also among his first contracts was the Lewis institute and several buildings for the McCormick and the Kingsbury estates. He also rebuilt the Chicago waterworks after the great fire, commencing before the embers were cold. The last contract was for the wood-work on the First National bank building. Mr. Clark has retired from active work, but still supervises his vast

interests, and is president of the Jonathan Clark Sons' Company, the active duties of this firm devolving upon his sons, F. W. and George T. Clark. This firm was incorporated in 1890, for a general contracting business, and with the prestige of its former success, will doubtless soon rank among the largest corporations in the city. Mr. Clark is still in vigorous health and is as active, bodily and mentally, as in his prime. He has been an important factor in the great progress of this marvelous city, and has witnessed it grow from a squalid frontier town to a great city, which to-day leads the entire world in its building development. Mr. Clark is a genial gentleman, modest and unassuming, and adverse to self-seeking notoriety. Of the many buildings owned by him, he never would allow the use of his name to appear upon them. He is a thirty-second degree mason, being a member of the Oriental consistory and Chicago commandery, and has passed all degrees in Odd Fellowship. Mr. Clark has always been a republican, and has for a long time been a member of the Union League club. He was united in marriage in July, 1852, to Miss Alice Sardeson, of England. Five children have been born to them: Eunice M., wife of Shay Smith; Frederick W.; George T.; Emma Retta; and Jonathan Yates.

Thomas Clark & Sons are builders and contractors. The senior member of this firm, Thomas Clark, is one of the oldest and best known of the builders and contractors of Chicago, and probably the oldest in the business, whose period of service extends from the time he was an apprentice to learn the trade in 1851, to the present writing. Mr. Clark is of English nativity, and came to America in 1851 with his mother, his father, William Clark, having died in England. Two elder brothers, Jonathan and Robert, had preceded them, locating in Chicago, and here he learned his trade in the small shop of Boggs & Smith, which stood upon the location of the present magnificent Board of Trade building. He continued with this firm four years, and then became a journeyman carpenter, subsequently becoming foreman of different firms, in which position he continued for several years. In 1864 he entered into partnership with his brother, under the firm name of Jonathan Clark & Bro., which association lasted until 1871, during which period they constructed the North Side waterworks buildings, Bowen's block on Randolph street, Farwell hall and numerous other noted buildings. At the time of the great fire they had in process of erection the Bigelow hotel, a large block for H. O. Stone, a residence for L. Z. Leiter, and many other buildings. After the fire the partnership was dissolved, and Mr. Clark continued business alone until 1875, in which period he constructed many noted buildings which are still standing. In 1875 Mr. Clark became a partner with William Jackson, and the firm of Clark & Jackson prosecuted a successful and vigorous business, which continued until about 1885. Among the notable structures erected by them, we mention Central Music hall, open Board of Trade building, Montauk building and numerous other office buildings and many private residences. The present firm of Thomas Clark & Sons, with office at 175 and 177 Aberdeen street, was organized in 1885, the members composing it being Thomas, Walter and W. Irving Clark, the two latter being the sons of the founder. Since its inception they have done a general building business, and have erected the following structures: Furst Company's building at Jackson

and Franklin streets; the Presbyterian hospital, a large number of factories, six of the largest freight houses for the Rock Island railroad, additions to the Lake Shore & Rock Island railroad passenger depot, the Chicago Telephone building, Central Union building near the Madison street bridge, the synagogue for the congregation of Anshe Maariv, an addition to Schlessinger & Mayer's dry goods store, the United States Appraiser's building, Haylin's theater, remodeled McVicker's theater, McNeill & Libby's plant at the Stock Yards, the establishment for the Calumet Canning Company of Hammond, Ind.; the plants for the Chicago Fire & Spring Company, the building for the Western Transportation Company, numerous warehouses in different parts of the city, the United States Government building at Vicksburg, Miss.; Wainwright building, St. Louis, besides numerous other buildings outside of Chicago. They employ, on an average, about one hundred and twenty-five men. Mr. Clark has devoted his entire life to the prosecution of his business, and has kept well abreast with the rapid advance in building construction. Although one of the oldest of the builders of the city, he is still in vigorous life, and bids fair to yet accomplish much more in his chosen vocation. Mr. Clark has been a member of the Builders & Traders' exchange since its organization. He was united in marriage, in 1857, to Miss Christine Peters, by whom he has four living children: Walter, a present director of the Builders & Traders' exchange; W. Irving, Jonathan and Grace E.

W. Irving Clark, the junior member of the above firm, was born in Chicago September 20, 1863, and in the public schools of this city was educated. In his youth he learned his trade of his father, and also learned the hardware business with Orr & Lockett and Edwin Hunt & Sons, with whom he remained four years. Since that period he has been a member of the above firm, and has general charge of the financial and office affairs of the company. He has devoted considerable attention to the advancement of the business, which he has chosen for his life work, and takes front rank among its young and progressive men. Mr. Clark is a member of the Builders & Traders' exchange, and is the secretary of the Carpenters & Builders' association of Chicago. He is also a member of the leading west side social club, the La Salle.

William Goldie, contractor and builder, was born in March, 1828, near Kilmarnock, Ayrshire, Scotland, where he received his education. He there also learned his trade and worked as a journeyman, subsequently going to Glasgow, where he remained until May, 1851, when he came direct to this city, arriving on the 4th of July. On July 5 he went to work for Alexander Loyd, who was a large contractor. In March, 1852, Mr. Goldie started business for himself, and in January, 1853, added to his business a sash, door and blind factory, at the corner of Monroe and Franklin streets. In 1861 Mr. Goldie sold out his business and was commissioned assistant quartermaster by President Lincoln, and ordered to report to the commanding general of the Army of the Potomac, with which he was assigned to duty as quartermaster of batteries of regular artillery. He remained with them, participating in the various battles in which they were engaged, until July, 1865, when he was appointed to distribute the artillery to various designated points of this country. He

was one of the seven volunteer quartermasters out of four hundred then in service, recommended by Maj.-Gen. M. C. Meigs, quartermaster general, United States army, to be commissioned as quartermasters in the regular army; but preferring civil life, he returned to Chicago and re-entered business as a contractor. Since that time he has built a great many of the large business blocks, public school buildings and engine houses. He also erected the State university, at Ann Arbor, Mich., a seminary at Lake Forest, and one at Winnetka. He built the first large business block erected after the fire, at the corner of State and Washington streets, now occupied by Marshall Field & Co. He is now one of the oldest and largest contractors in Chicago. Mr. Goldie has persistently adhered to his business interests and has never interfered with politics otherwise than to cast his vote for candidates who in his judgment have promised best to subserve the interests of the city or country. He was one of the early members of the Scotch Presbyterian church; was among the first members of the St. Andrew's Society of Chicago, and is a member of Ashlar lodge No. 308 A. F. & A. M., and of the Grand Army of the Republic; also of the military order of the Loyal Legion of the United States. He has been president of the Carpenters & Builders' association of Chicago for many years, and very successfully conducted the largest strike that was ever organized in Chicago. Mr. Goldie was married, early in 1851, to Mary, daughter of James Somerville, a grocer of Edinburgh. In 1858 Mrs. Goldie died, leaving four children: Mary E. (now Mrs. D. M. Swinney), Emma N. (now Mrs. Frank U. Harvey), and two sons who died in their youth. In 1860 he was married to Miss Rose Eckhardt of this city, who has borne him two sons: William and Robert, both of whom are in business with their father.

One of the oldest and best known exponents of the carpenter's art is William Morley, carpenter, joiner and manufacturer, 233 Fifth avenue, who enjoys an excellent reputation for fine work and reliability. Mr. Morley, who is a gentleman of fifty-nine, and a native of England, but a resident of this city nearly forty years, is a practical and expert workman, with long and varied experience. He started in business on his own account in 1858, and soon established himself in popular favor and prosperity, and has from the first received a large and gratifying patronage. Store and office fitting is his specialty, while general jobbing of all kinds is promptly and satisfactorily attended to.

C. H. Blair, contractor, room 64, 175 Dearborn street, is an old and one of the most enterprising and deservedly prosperous builders in the city, and has done much toward the upbuilding of Chicago and the enlargement of its visible limits, indicated by the area of space built upon. He was born in Nova Scotia in 1835, a son of Ephraim H. Blair of the same nativity. The father was a shoe manufacturer of capital and enterprise, who is now living retired in Boston. Young Blair, who had acquired a practical knowledge of his trade at Natick, Mass., came to Chicago in 1855. During the succeeding two years he worked at his trade by the day and began to exercise his business ability as a subcontractor in a limited way. That he was successful in these early business ventures goes without saying. Inducements presented themselves to his consideration which influenced him in 1857 to remove to Delavan, Wis., where he was engaged in contracting and building with good results until the

fall of 1871. At the time the great fire in Chicago opened up a splendid field for Mr. Blair's enterprise, capital and practical knowledge of building, and in the following spring he again became a resident of the city. He soon came to be recognized as one of Chicago's foremost contractors, and his building operations have been extensive, as is indicated by the following list of structures with the erection of which he has been identified: The Insurance exchange, the Traders' building, the Imperial building, the Commercial bank building and the Zeese & Conkey building, Chicago, and the American National bank building and Board of Trade building, Kansas City, Mo., and other large buildings of the country. On his own property, at the corner of Thirtieth street and Prairie avenue, he has just finished a large six-story apartment house, one of the largest, most convenient and most elegant structures of its class in the city, a representation of which is shown among the illustrations in this work. This is his own notable recent work, he having practically retired from active business some years since, to the enjoyment of a quiet life and the care of his property, which includes much valuable Chicago real estate, including six hundred feet at the corner of West Madison and Halsted streets. Mr. Blair is a self-made man in the best and most creditable sense of that often used, sometimes abused, term, and has been truly the architect of his own fortune; at the same time he has been helpful to others, and has ever been known as a man of great public spirit and practical zeal for the public welfare and the growth and enhancement of the best interests of his adopted city and country. His energy has been untiring, his enterprise unflagging, his business methods have been straightforward, and his reputation is untainted. It is to such citizens that the magic city of the lake owes its phenomenal growth and prosperity, and it can not but be a source of much gratification to such to look about them upon structures which are at the same time monuments to their own skill and public spirit, and silent but eloquent witnesses to Chicago's greatness.

J. B. Allen, builder, with office at 265 to 269 Dearborn street, is a native of England, born in 1831. He was reared to early manhood in England, receiving, during youth, a fair education, and learning his trade thoroughly during an apprenticeship of seven years, receiving, during that period, not a penny for his services. In 1849 he sailed for America, and after a voyage of several weeks landed in Boston, where he applied to numerous persons for work, but unsuccessfully, as his boyish appearance was against him. After some time he was given employment by an Englishman, but was so unaccustomed to the manner of working in America that he did not begin at sunrise in the morning, as was customary, but began at seven after the English fashion and quit at six in the evening instead of at sunset. This led to some controversy which, after two or three days' work, led to his demanding his pay for time already worked, and upon receiving it took the steamer for New York city, where he arrived about nine o'clock in the morning with seventy-five cents in his pocket. The rain was pouring in torrents but he started out resolutely in search of work, forced by necessity to do something for the necessities of life. He went to where a new building was being erected and asked the foreman for a job, which was immediately offered him. However, he continued to look for work, in order to better himself, and by twelve o'clock of that day had received five

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C. A. Blair

offers of work. Finally he accepted a position with a foreman on Broadway, who agreed to furnish him with tools which he could pay for by his work. He remained with this gentleman for about six months as foreman, and then obtained a situation under Commodore Cornelius Vanderbilt, having full charge of all the ship joiners' work on the ocean steamers plying between New York and Liverpool, owned by Commodore Vanderbilt. This was a very responsible and trying position, but young Allen acquitted himself creditably. In 1851 he came to Chicago at the time cholera was raging here, and his first employment was to carry out bodies, both living and dead, of cholera victims, receiving for his services \$6 per day. Later he obtained work with John Sollitt, with whom he remained until 1855, and upon the completion of the Young American hotel, at the southeast corner of Randolph and Dearborn streets, he went into business independently for himself, and has continued thus down to the present time. Many of the most important building contracts ever awarded in this city were given to Mr. Allen. In 1857 he started for California on the Vanderbilt line, going via Aspinwall and thence to Graytown, Nicaragua, where he was obliged to spend six weeks in that hot climate, there being no steamer there to convey him on to California. Finally the government sent a war vessel to take all from the Isthmus, but finally landed all at Aspinwall. By this time Mr. Allen's money was exhausted, which obliged him to apply to the British consul there for a pass to San Francisco. This succeeded, but upon reaching San Francisco he had not a cent. He secured work, however, at his trade, and while there became acquainted with Mr. Comstock, who afterward discovered the celebrated Comstock mine in Nevada. Mr. Comstock soon persuaded Mr. Allen that he could become rich in a very short time and induced him to go to the mines. They left San Francisco by steamer, going to Sacramento, thence to Placerville (or better known as Hangtown) by stage. Here they formed a company with five miners, making seven in all, and secured blankets and provisions, each carrying a weight of about forty-seven pounds, and, thus equipped, they started on their journey across the Sierra Nevada mountains, camping among the savages and wild beasts, and enduring indescribable hardships in the storms and snows, but after the ninth day, after traveling a distance of one hundred and sixty miles on foot, they reached the mines. During this perilous trip on the third day out snow fell to the depth of four feet, and from this they had no protection, having camped in the open country. They began work for gold at this mine, but not finding that metal they struck a dark, apparently worthless rock, which the miners pronounced unfavorable. Accordingly they packed their blankets preparatory to starting back to California by the way they had come, but during the delay a few other miners who had arrived offered to employ them to continue work on the Comstock mine. Mr. Rogers, the leader of the new miners, proposed to buy Comstock's claim, and offered Comstock \$1,000 for his interest, provided he would throw in his wife and dog. To this proposition Comstock agreed, never dreaming that his wife would consent, but she did, and the papers were accordingly made out for \$1,000, the wife and dog being the consideration for the mine. Mr. Allen was honored by being a witness to the sale, and appended his signature to the papers. The money was paid in \$20 gold pieces. Rogers, who from the start knew

the great value of this dark rock, employed all the men to work for him, but Comstock finally made up his mind to leave the mines, and endeavored to induce his former wife to accompany him, but she refused, and he was forced to proceed without her, and a few weeks later news was received of his death on the Esmeralda mountains. Then Mr. Rogers made it known that it was the richest mine in the world. He remained here until 1863, at one time owning the entire Comstock mine. Mr. Allen on one occasion in shaking dice won this entire mine, the value of which was unknown, but he subsequently lost it in the same manner. While in the western country Mr. Allen built a fine hotel in Silver City, of which he was landlord for a short time. In 1864 he returned to Chicago, via New York, and resumed his building operations until the Colorado panic struck the place, when he purchased a mine which he still owns. He remained in Colorado for two years, enduring many severe hardships, but since then has been in the building business at Chicago, and has constructed since on a very large scale. The buildings which he has erected may be seen in all parts of the city. He is a member of the Builders & Traders' exchange, the Royal Arcanum, and is one of the reputable business men of Chicago. He was married in Boston, in 1850, to Miss Sarah A. Unwin, by whom he has one son and two daughters.

George Olsen, of the firm of George Olsen & Son, contractors and builders, is one of the old extensive and active builders of this city, although he commenced on a small scale in 1857. He has erected hundreds of structures, partly in full and partly in carpenters and joiners' work only. He began in the fifties, according to his own designs and drawings, the building of cottages, two and three-story frame buildings and continued up to about 1867. In 1868 he designed and built one of the first brick buildings on Milwaukee avenue; a block of six stores and flats, corner of Huron street and Milwaukee avenue, one hundred and forty feet front, one-half belonging to himself; also several other brick and frame buildings on that avenue and other streets, principally in the northwestern part of the city. He designed and built the first stone front building on Milwaukee avenue, at the intersection of Peoria street, the Bohemian Turner hall, on Taylor street, scores of two-story brick houses for Col. Augustus Jacobsen, and several for George H. Severson. After the great fire he concluded as a business matter to let the architects do the designing, so as to stand a better chance for competition. Since that time he has built hundreds of houses under the direction of our most prominent architects; amongst others, a block of five three-story buildings at the corner of Robey and Van Buren streets; a block of seven four-story houses on Ogden avenue and Congress street; a block of ten four-story buildings, on Halsted and Van Buren streets; twenty-six three-story flats, on Bissel street; forty-one houses for S. Wheeler, Esq., on Madison street, Warren avenue and Lake street; the insane asylum in St. Joseph, Mo.; five public schools in Chicago—the Haven, Montefiore, Froebel, Ryerson and the Longfellow; several large shops and factories; and is at present building a high school at Oak Park, and has just been awarded a contract for all the carpenter and joiner work on a high school for the city of Chicago, at the corner of Potomac avenue and Davis street. Mr. Olsen was born in Denmark February 25, 1825. He came to the United States in 1854, and after six weeks' voy-

age in a sail vessel, landed in New York. He worked at his trade there a short time, then went to Boston, where he worked eight months in a cabinet shop, and was also then employed in the great Chickering Piano works. From there he came to Chicago, April, 1855, but not liking it here remained but a few months, working at house building and in an ice box manufactory. He then went to Madison, Wis., worked at cabinet and house building till October, then to New Orleans, working there during the winter of 1855 and 1856, in a shipyard and a cabinet shop, thence to St. Louis, Mo., working there about three months at house building and cabinet work, and finally arriving in Chicago again May 10, 1856. In June, 1857, he began contracting for buildings. In 1859, owing to a general stagnation in all trades, he engaged in manufacturing and wholesaling liquors. In the spring of 1860 he went to Memphis, Tenn., and established a factory and saleshouse of mineral waters. He was very successful for a time, but the Rebellion in 1861 sent him back to Chicago again, which from that time was his permanent home. He learned his trade as a joiner and cabinetmaker in Denmark. He served five years as an apprentice, worked seven years at his trade in Copenhagen, and most of that time attended a technique institute in the evenings, where drawing and mathematics were taught and instructive lectures were given. In 1859 he married a Danish lady named Emily Miller. The same year he became a Free Mason. Mr. and Mrs. Olsen have had ten children: Anna, Walter, Clara, Viggo, Dagmar, Howard, Olga, Florence, Edwin and Lulu. Mr. Olsen is unquestionably one of the most reliable builders in the city, and one of the oldest. He has been for many years a member of the Builders & Traders' exchange, the Carpenters & Builders' association and several other societies.

The firm of George A. Arnold & Co., carpenters and builders, rear 82 Dearborn street, Court place, employed from twenty to fifty hands in 1887. Mr. Arnold has been in business in the city since 1856, and has an extensive trade in all branches of carpentering and building, both in the city and suburbs. The firm undertook any class of work, either jobbing work or by contract. They employed only skilled workmen, upon whom they could rely, and had in their employ cabinetmakers, upholsterers, painters and locksmiths. Mr. Arnold, being a thoroughly practical and experienced man, supervised all the work personally, and was thus able to guarantee perfect satisfaction. Mr. Arnold is well known, and esteemed for his thorough business qualities and reliability.

Peter Kauff is one of the oldest carpenter contractors of Chicago, with shop at 42 Dussold street and residence at 204 South Peoria street. He came to the United States in 1852, and for two years lived in the state of New York and then came to Chicago, where he has since lived. In his boyhood he learned the carpenter's trade under an uncle in France, and upon coming to the United States worked at his trade, part of the time by the day, until 1857; but since that date has been contracting with much success. He ranks, therefore, among the oldest carpenter contractors in Chicago, and since 1871 his shop has been at its present location. Since 1857 Mr. Kauff has erected scores of buildings in all parts of the city, in fact he may be said to have twice assisted in building up Chicago, once before and once after the fire. He put up the M. Brandt brewery, the Schoenhofen, the Bartholomae and the

Dewes breweries, and did extensive work for Conrad Seipp, for Mr. Schmidt and for John L. Hoerbor. In addition to this he has erected several grain elevators and many warehouses in Chicago and vicinity and built the church and convent in Washington Heights and the Indian school at Rensselaer, Ind. He is competent to carry forward to a high degree of perfection any contract for building which he undertakes. He is a member of the Builders & Traders' exchange, and was treasurer of the Master Carpenters' association from its organization until 1891. He was born in Alsace, France (now a German possession) in 1832. Absolutely selfmade as the term is usually applied, having secured his present goodly property, responsible position and enviable reputation through upright habits and sterling business methods, he is universally regarded as one of the best citizens of foreign birth Chicago has.

Eli Payne, carpenter and builder, has been a resident of Chicago since 1853, and has been active in promoting, to the extent of his ability, the industrial developments of this city, his knowledge of his vocation enabling him to meet the requirements of his extensive patronage. His office is at 60 South Desplaines street. He was born in Schenectady county, N. Y., in 1831, to Robert and Eliza (Butcher) Payne, who were natives of England. The father was a farmer by occupation, and he and his wife died in the state of New York. Eli Payne was the youngest of three sons, and was reared and educated in his native county, where he also learned his trade. Upon his arrival in Chicago he was first employed by William Goldie, continuing with him for some time, and in 1857 engaged in business for himself at the corner of Congress and State streets. His office has been at different locations, but for the past twelve years he has been at his present place of business, being now one of the oldest carpenters of the city. He has put up many of the imposing and handsome churches of the city, besides many business houses. He erected St. Peter's and St. Paul's churches in 1861, the Presbyterian church, at the corner of Third avenue and what was then Edina place, in 1858; the Methodist Episcopal church, on Michigan avenue; Dr. Collier's church, immediately opposite; a church on Drexel boulevard in 1867; one on South Park avenue and Thirty-third street; buildings for M. D. Wells; the King's place; the corner business block belonging to Judge Otis; Lyon & Healy's place; the Hebrew club house; the bakery for Mr. Aldridge, besides numerous other buildings throughout the city. He is a member of the Carpenters & Builders' association, and now has employed about twenty men, although he usually furnishes about one hundred men with employment. He was married in this city in 1856 to Miss Catherine Maxwell, by whom he has one son, Robert E. Mrs. Payne is an earnest member of the Episcopal church and Mr. Payne is a member of the Masonic fraternity. He is progressive, active and energetic, is a thorough and skilled workman and as a result is given large and important contracts, which he has filled with fidelity and ability.

F. H. Avers, who died December 23, 1890, was born, in Buffalo, N. Y., about sixty years ago, and in that city served a four years' apprenticeship to the trade of carpenter and joiner, at \$25 per year. After reaching a suitable age and having had considerable experience, he

began contracting at his trade in Buffalo, but later went with a partner to Detroit. Concluding to change his location he walked from Detroit to Grand Rapids, thence to Kalamazoo (a distance of forty miles), in ten hours, and thence to Chicago. Not being satisfied with the business outlook here, he soon returned to Buffalo, but the following year boarded the propeller Galena and in two weeks again reached Chicago, his vessel being the first boat that got through in the spring. In the spring of 1856 he went to work at fifteen cents an hour on a building at Lake Forest, where he had to clear away trees and hew the timbers, and the buildings he then put up are yet standing. Succeeding this, he worked for some time for Mayor Frank Sherman. He constructed a house at the corner of Twenty-eighth street and Wentworth avenue, which was afterward removed to the present site of Havlin's theater. Business was not as prosperous in those days as it is at present. Although the city was rapidly growing, there was not as much wealth here then, people were in harder circumstances, and contracts were comparatively small and unprofitable. Mr. Avers, at that time, lived at the corner of Halsted and Madison streets, and long before daylight would start on his way to his work and not return till long after dark, taking at noon but fifteen minutes for dinner. In those days the water system did not reach many of the side streets and many wells had to be dug and bricked. Much work of this character was done by Mr. Avers. He built icehouses and assisted in filling them with ice cut from the lake. He was one of the carpenters to work on the old Sherman house at fifteen cents an hour, continuing until it was completed. Soon after this he went into business for himself. He built an addition to the Sherman house forty feet front on Randolph street, and soon after constructed the Oakwood cemetery buildings. He built the first Palmer house, at the corner of Quincy and State streets, and after the fire put up the new Sherman house; built a large store building at the corner of State and Madison streets; erected scores of buildings in Riverside; and throughout his long residence here established a reputation secondary to that of no other Chicago business man. His success was self-won, as he started in the most humble way and steadily worked his way upward. He resided at 2809 South Park avenue. Politically he was first a whig and since the organization of the party a strong republican. He married Miss Emma Markham, and after her death took for his second wife Miss Jennie Parker. He had two sons, H. M. and F. G., and a daughter, Cora, who died at the age of sixteen years. He was a member of the Masonic order, having been identified with Home lodge, Chicago chapter and Apollo commandery.

Among the many fine structures which have been erected to the glory of Chicago, the following, which are eminently worthy of mention, are due to the skill and talent of John Ramcke: The establishment belonging to George L. Peterson, dealer in wood mantels, at Sangamon and Pratt streets; Reuter's business block, at the corner of Garfield and Seminary avenues; Lewis Biegler's store and flat building at the corner of State and Chestnut streets; a block of residence buildings at the corner of Prairie avenue and Twenty-second street; William Heineman's residence on Hampton court; Zero Marx's factory building on Superior street near Wells street; Kemper Bros. store and flat building at Halsted street and North avenue, etc. All these structures show that a man of sound and intelligent views has had

control of affairs, and that Mr. Ramcke is the master of his trade is undoubted by any one who has a knowledge of contracting and building. Mr. Ramcke has been a resident of this city since 1872, and for about twelve years thereafter worked at his trade, after which he began contracting, to which calling he has since devoted his time and attention. Although the buildings which rise as monuments to his cleverness and competency are principally residences, he has also erected a number of fine factories and business blocks, of which he may well be proud. He was born at Altona, near Hamburg, in Holstein, Germany, March 18, 1854, to Hans H. and Gaza (Thiemann) Ramcke, the former of whom was in the furniture business and a cabinetmaker by trade. John Ramcke was given good advantages in his youth, and took a regular course of study in the school of polytechnique at Altona, after which he spent one year in an architect's office, the three following years being devoted to serving an apprenticeship at the carpenter's trade, leaving his native country upon the completion of his trade. He came direct to Chicago, where his time has been occupied as above noted. He was married in this city to Miss Christina Dehner, who was born at Wurzburg, Bavaria, Germany, to Caspar and Maria Dehner. To their union the following children have been born: Christina, Sophia, William, Annie and Lena. Mr. Ramcke is a member of the Carpenters & Builders' association, in which order he fills the position of treasurer. He has attained the Chapter in the Masonic fraternity and in the A. O. U. W., belongs to Concordia lodge No. 41, and is a member of the Grand lodge of Illinois.

D. Goodman is one of the foremost builders and contractors of Chicago, and the active energetic and honorable life he has led is well worthy of imitation. He is a native of England, born in 1847, a son of Ephraim Goodman, also a native of England, who sailed for America in 1855, landing in Chicago on July 4, of the same year. He had been a mason contractor of England, and after reaching Chicago he resumed his trade, which he successfully carried on until 1873, since which time he has been retired. He erected the old First National bank, which stood the test of the great fire of 1871, and also the Fidelity building, which remained standing during the fire, although the buildings around it were laid waste. He has erected many of the famous and substantial buildings of this city, and his work was characterized by great durability, symmetry and perfection. He was one of the leading contractors of his time and is now one of the oldest masons of the city. To himself and wife four sons were born: E. D., a mason contractor; David; F. M., a druggist, and Edward, a mason contractor. David Goodman, the immediate subject of this sketch, was brought by his parents to Chicago when only eight years of age, and in this city was educated. At the age of eighteen years he began learning the carpenter's trade under Amos Grannis, with whom he remained until he had thoroughly mastered his trade. For several years thereafter he worked as a journeyman and foreman, but has been in business for himself for many years, and during his long and active career here has erected many of the finest structures of the city, and has identified himself with the building interests of the city. He has been quite a traveler, and at one time visited South America, the Isthmus of Panama and spent two years in Honduras. In 1863 he enlisted in the Union army, in Company G, Eighth Illinois cavalry,

and was on active duty until the close of the war. He is a member of the Masonic fraternity, in which he holds the rank of Knight Templar, being past master of Golden Rule lodge. He has been a representative to the Grand lodge on several occasions, and is a member of the Royal Arcanum, St. George society, and the G. A. R. He was married August 4, 1867, to Miss Jennie E. Smith, by whom he has one son and three daughters.

Among the goodly buildings of Chicago which in particular attract the attention of all lovers of architectural art may be mentioned the following, which were erected by David R. Rothrock: The residences of Dr. Burnham, of Orchard street; of Dr. Fernandez, of Bissell street; Mr. Johnson's residence on Dayton street; Mr. Kemper's home at Kemper place. These buildings reflect the highest credit on the builders and contractors, for they have stood the tests of time, and are to-day as unshaken and solid as when first erected. He sustains a wide reputation, being reliable, painstaking and thoroughly satisfactory, as there is ample evidence to testify, and throughout a long residence in Chicago he has steadily climbed the ladder of success, and is now considered one of the leading builders and contractors of the city. He was born near Lewistown, in Mifflin county, Penn., July 16, 1830, to Jonas and Lydia (Neighly) Rothrock, the former of whom was a miller by occupation. At the age of ten years David R. Rothrock removed to Stark county, Ohio, whence, at the age of thirty, he removed to Akron, Ohio. In 1862 he became a member of Company A, Forty-second Ohio volunteer infantry, and did service all through the war, being mustered out at Mobile, Ala., from Company E, Ninety-sixth Ohio volunteer infantry, having participated in the battles of Chickasaw Bluffs, Arkansas Post, Thompson's Hill, Champion Hill, Black River Bridge, siege of Vicksburg, Fort Spanish and Fort Blakeley. He returned to Ohio and subsequently spent a few years at Lansing, Mich., following mercantile pursuits, but in 1870 became a resident of Chicago, where he has followed contracting and building with success up to the present time. He was married in this city to Mrs. Jennie (Arnold) McClure, of Shirley, Me., a daughter of Ira and Mary (Grant) Arnold, both members of old families of the state of Maine. Mrs. Rothrock became the mother of a son and daughter by Mr. McClure—the son Philander, who is a man of family and a farmer of Ingham county, Mich., and the daughter Mary C., wife of John N. Clarke, a bookkeeper and accountant. By Mr. Clarke she has a daughter, Beatrice. Mr. Rothrock is a member of the Grand Army of the Republic, Hancock post 560, and socially is a member of the Knights of Honor. He and his wife worship in the Baptist church.

F. P. Nelson is a well-known carpenter and builder, with office at 159 La Salle street. He was born in Copenhagen, Denmark, in 1843, a son of Charles P. Nelson, who died in Denmark, having been a builder there. F. P. Nelson is the only son of the family, and was given the advantages of the schools of his native land, in which country he also learned the trade of carpenter and builder. He sailed from Denmark in 1862, taking passage at Hamburg, and landed at Quebec, but soon after went to Ottawa, Canada, where he worked on the government buildings for about one year. He enlisted in the quartermaster's department of the Army of the Cumberland, under Captain Reedy, in which he served until the fall of 1864. He came to Chicago shortly after and worked for a few years as a journeyman carpenter,

but engaged in business for himself in 1870, and has, by earnest endeavor and the conscientious discharge of every duty, become one of the foremost carpenters and builders of the city. Some of the fine buildings which were erected by him are the handsome structures on both corners of Van Buren and Market streets, for Hon. J. P. Altgeld, the Dale building, on the corner of Harrison and Dearborn streets; the Foreman building at Adams and Franklin streets; the immense piano and organ factories for W. W. Kimball & Co. at Twenty-Sixth and Roekwell streets, and the A. O. Slaughter building on Wabash avenue. Mr. Nelson is a thoroughly self-made man, as is evidenced by the fact that when he reached Chicago he had no capital whatever, but by perseverance and honest toil has won enviable rank. He is a member of the Builders & Traders' exchange, and the Carpenters & Builders' association. He was married in 1866, and now, with his family, is living in comfortable circumstances in this city.

Valdemar Lund, carpenter and builder, was born in Copenhagen, Denmark, July 3, 1835, and has been absent from his native shores since October, 1866. His father, Christian Lund, was a blacksmith in the Marine, in which he served for twenty-six years. Valdemar Lund is the third son in a family of nine children, and in the land of his birth he was educated and also learned his trade, serving an apprenticeship of three years in Copenhagen, after which he traveled for five years in Germany, France, Italy, Greece, Egypt, Turkey, Jerusalem, Bethlehem, Austria, and back to Denmark. In October, 1866, he sailed from Liverpool to New York City, the voyage thither consuming three weeks, and seven more days were spent in reaching Chicago. He was first employed by George Oleson, with whom he remained two years, then began operations for himself, which he has since successfully conducted. Since coming to America he has visited many points of interest in this country, and has spent considerable time in Florida, California, Minnesota, Wisconsin and other states. He is one of the old contractors of Chicago, and is well and very favorably known among the builders. He built the Superior hotel on Superior and Clark streets, twelve houses on Market and Ohio streets, five houses on Noble and Indiana streets, a large factory on Curtis street, seventeen houses on Indiana street, the Lutheran church on La Salle avenue and Elm street, and numerous others in the city and suburbs. During his business career Mr. Lund has never had a partner, but has always conducted his own affairs to his credit and profit. He is a member of the Builders & Traders' exchange and the Carpenters & Builders' association, and has always done all in his power to promote the interests and welfare of these orders. He is a member of the Masonic fraternity. In 1865 he was married in Denmark to Miss Laura Kaehne, who died in 1882, having borne him ten children, of whom the following are living: Valdemar, Jr., Amanda, Tsorvald, Agnes and Arthur. The work done by Mr. Lund is symmetrical, strong and durable, and the workmen employed by him are always skillful and competent, consequently his services are in constant requisition and his time is fully and profitably occupied.

Ira A. Heath, a leading carpenter and builder of the city of Chicago, has his residence at 3134 Prairie avenue. He was born in Windsor, Broome county, N. Y., August 29, 1844,

the son of Asa and Mercy (Cone) Heath, natives of Berkshire, Mass., who removed to New York before the birth of Ira A., who from there went to Massachusetts, in 1859. In Lee, Berkshire county, Mass., Ira Heath was principally reared and educated, his scholastic acquirements being obtained in the public and high schools. In 1866 he came to Chicago, and began learning the trade of carpenter and builder with his brother, F. C. Heath, who had preceded him to this city several years. After finishing his apprenticeship, Ira Heath became a partner with his brother, but a few years later began business independently, and has since been alone. He was given the contracts for the M. D. Wells residence, for the Ream building and for the home now occupied by Field, besides numerous other costly and elegant residences and buildings. His work has been almost entirely confined to residences, a great many imposing and substantial ones testifying to his knowledge of his calling and to his skill and ability. He was married in April, 1888, to Miss Minnie Smith, by whom he has three children: Helen A., and Herbert and Clarence, twins. Mr. Heath is a member of the Builders & Traders' exchange and the Carpenters & Builders' association.

As one of the names prominently identified with the building interests of the city of Chicago, that of George S. Hodgson commands considerable attention, for the perfection of his work entitles him to distinction. He learned his trade in Massachusetts, and came to this city in December, 1871, immediately after the great fire, and here found plenty of work to do at good wages. He continued to give constant personal supervision to his business, and it is a natural deduction that his work is up to the highest standard in point of finish and perfection of detail, as well as in scientific principles of construction. He is now one of the leading contractors and builders of the northern part of the city, and has developed his business on a strictly legitimate basis to its present admirable proportions. He takes jobs entire, mason work, roofing, etc., and has erected some of the handsomest buildings in Chicago, and has worked on many more, prominent among which are the Grand Pacific hotel, the Tremont, Commercial, the Express building, Church of the Holy Name and others. He has also erected a fine bridge across the Arkansas river at Little Rock, where he remained five months. He was born in Nova Scotia, but in 1869 became a subject of "Uncle Sam," and after a residence of two years in Massachusetts, became a resident of Chicago, as above stated. He was married in 1874 to Miss Mattie Barkley, of Springfield, Ill., and by her has an interesting family of three children: Hattie, George and Willic, who are now attending the public schools of this city. Mrs. Hodgson's father was formerly a planter of Tennessee, but is now a furniture dealer of Springfield, Ill. Mr. Hodgson's parents still reside in Nova Scotia, where his father was born, in 1807, and his mother in 1812, the former being a farmer and lumberman. George S. Hodgson is a member of the Knights of Pythias and the Knights of Honor, in which lodges he has held various offices. His wife is a worthy member of the Presbyterian church.

Charles B. Williams, an old member of the Builders & Traders' exchange and a general contractor of this city, was born in Bangor, Me., in 1843, but came to Chicago in 1868, and since 1871 has been actively engaged here in building. He was first associated with B. F. Walker and for two years carried on a large factory in connection with general build-

ing. Since 1873, however, he has been very active in building and selling as well as in contracting, of which he has done his share in Chicago, as well as in other cities and states. He has erected some handsome blocks for himself, one eminently worthy of mention being an elegant four-story and basement apartment building on Wells and Superior streets. He has now, in process of erection, a fine apartment block on the northeast corner of Dearborn avenue and Goethe street (on the north side), containing twenty-three suites of rooms, a drug store and doctors' offices, all of which will be finished in the latest style and will bring an annual rental of \$16,000, the building being worth fully \$130,000. Mr. Williams has always been enterprising and industrious, and being also honorable and thoroughly reliable in every way, he stands high in the estimation of the public and that of his fellow contractors.

W. G. Waddell (son of James Waddell, a successful carpenter and builder, formerly of Ohio, who came to Illinois in 1840 and located at Freeport, but later died in Wisconsin, his last years having been spent on a farm) was born near Gallipolis, Ohio, in 1822, and was educated in Illinois and Indiana, principally at Michigan City, where his father built what is known as the city mills as early as 1836. He thoroughly learned the trade of a contractor and builder with his father during his residence at Freeport, Ill., where he helped to build about one-third of all the buildings erected in that city during that period, so that when he came to Chicago in 1871, he was an experienced, reputable builder. His operations have been principally confined to dwelling houses in all parts of Chicago which are the result of his study and labor. He is located at 3232 Rhodes avenue and is a member of the Builders & Traders' exchange and the Carpenters & Builders' association. He was married in 1878 to a Mrs. Crockett, who has been a resident of Chicago since she was sixteen years old.

William Mavor, a highly successful contractor and builder of Chicago, residing at 166 Oakwood boulevard, with office at room 703 Stock Exchange building, is a native of Scotland, born February 4, 1848, and in the land of his birth he served a four-year apprenticeship at his trade, being also educated in Scotland. At the age of eighteen years, or in 1866, he sailed from Glasgow to America, and after landing in New York City worked at his trade for one year. On the morning of Thanksgiving day, in 1867, he landed in Chicago, a perfect stranger. Although the weather was bitterly cold he sought employment and succeeded in obtaining work in Lake county, Ill., remaining there two years, when he returned to Chicago and worked a short time with Joel Bullard. He was next employed by John McEwen, remaining with him as a journeyman until the great fire of October, 1871. At this time he had deposited about \$1,500 of savings in the bank. His clothes and all his tools were destroyed, but he immediately began contracting for himself on a small basis and first built a large number of shanties for the relief and aid societies and later went into the sash, door and blind business, in which he continued with a factory for about six years, then resumed contracting, and to this calling has since devoted his time and attention. He did carpenter work on the two hundred apartments for the Armour mission, the largest in this country; also for the twenty-storied Masonic temple, the highest building on the continent; St. Gabriel's church; La Salle Street Lutheran church; Graceland chapel; the Forty-first Street



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Wm. Mavor

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Presbyterian church; the Immanuel Baptist church (remodeled); the refectories and boat houses in Lincoln, Garfield and Douglas parks; the Hoffman apartment building in Ellis park; two apartment buildings for W. L. DeWolf; the Temple court building; the Como building; the residences of J. M. Adst, E. S. Dreyer, H. M. Marks, G. W. Brandt, Mrs. R. Crane, E. A. Valentine, Reginald DeKoven, and Mr. Morehouse, the latter on Grand boulevard; work for the Great Link Belt machine shops, and Hill Bros.' elevator; the dormitory and professors' houses for the McCormick Theological seminary; the Armour Training school (a large contract), Thirty-third street and Armour avenue; the Construction building for the World's Fair, and the Agricultural building for the World's Fair, the second largest contract on the fair buildings, awarded at \$245,000. He is a member of the Builders & Traders' exchange, and has been a director of the Carpenters & Builders' association since its organization, is vice president of the Cottage Grove Building & Loan association, and is a worthy Knight Templar. He was married in 1872 to Miss Mary E. Strang, by whom he has one son and four daughters.

L. D. Bristol, contractor and builder, 311 Stock Exchange building, began business in Chicago in February, 1871, and has been a carpenter contractor from that time to the present, and is still active. He has been concerned in the erection of the following among other buildings: The Insurance exchange, the Traders' building, the Imperial building, the Commercial bank building, the Zeese & Conkey building, the Tilt-Smith Shoe Company's building, the American National bank building, and the Board of Trade building.

Some men are born great, some achieve greatness, and some have greatness thrust upon them. The axiom as here quoted might well apply to mechanical pursuits, for truly your mechanic is born to his craft, achieves a local or national celebrity, according to his cleverness, and may have an accidental greatness in his chosen pursuit thrust upon him. To the former class, however, belongs Oliver Wilson, of Hyde Park, one of the best known builders in this city, who has won both local fame and a modest fortune as a result of his skill as a carpenter and contractor. Mr. Wilson was born in Hoffsoler, Norway, in 1844, where he received a liberal education and served his apprenticeship of five years to a house carpenter. In 1869 he immigrated from Norway to America, settling in Chicago, where he first sought and obtained employment as a cabinetmaker with A. Phillips, at that time a prominent manufacturer of this city. In 1871 the young mechanic, whose careful and skillful workmanship was noted by his employers, severed his connection with them and moved to Hyde Park, where he has since resided, and toward the upbuilding of which he has contributed as much as any other man. For several years he was employed by Mr. Treutler, for whom he finished some of the best blocks and residences in Hyde Park and the adjoining suburbs. Afterward he entered into partnership with his brother, Gilbert Wilson, a sketch of whom appears elsewhere in this volume. Together they erected scores of handsome residences and stores with a skill and minuteness of detail that has brought its legitimate reward. For the past seven years Mr. Wilson has conducted his business independent of partnerships, and with the same unvarying success that has always characterized his efforts. Some of his most

noted work was done for Paul Cornell, H. N. Hubbard, Lyon & Healy, Dr. Oughton and Col. Waterman. The boathouse at Hyde Park is also a graceful tribute to his handiwork, as are also several residences of his own. To enumerate all his successes in the building line within the past twenty years would form almost a history in itself. As a superintendent of building construction it would be hard to find his equal, so conscientious is he as to details and honesty of workmanship. Mr. Wilson is married, the father of six children, and is a member of the Knights of Honor.

Gilbert Wilson ranks among the oldest and most successful carpenter contractors in this city, although his efforts have been mainly confined to Hyde Park. Mr. Wilson was born in Norway in 1849, and is a son of Ole Wilson, whose occupation was that of a farmer. In Norway young Wilson laid the foundation for future success by beginning the trade of a carpenter and securing a good common-school education, although he was but sixteen years of age when he crossed the ocean and located in Chicago, or rather at what was then Hyde Park, a hamlet with only about twenty houses within an area of half a mile. Here the youth fell in with William Truetler, a carpenter contractor, from whom he gained an excellent knowledge of the carpenter business. In 1872, the year following the big fire, he devoted himself to what is generally known as carpenter jobbing work, afterward venturing into an important business as a contractor. Since then Mr. Wilson has erected scores of residences and business blocks adjacent to and in Hyde Park, all of which are unusually creditable specimens of the carpenter's handiwork. The schoolhouses he erected at Parkside, Woodlawn, Park Manor, Hyde Park and on Madison avenue are especially worthy of mention, indeed many good judges assert that the school building at Woodlawn is the best in the state, being beautifully designed and finished in oak. In the building of residences Mr. Wilson has been equally fortunate, and the following are a few among many of his best residence works: for W. B. Judson, a \$22,000 dwelling at Washington avenue and Fifty-seventh street; for R. R. Donnelley, the publisher, a \$15,000 residence on Jefferson avenue near Fifty-first street; for Mr. Noyes, a wealthy Hyde Park resident, a very stylish and durable dwelling on Jefferson avenue; ten houses for William Craig, between Fifty-first and Fifty-second streets, costing from \$6,000 to \$10,000 each; for J. C. Sampson, on Washington avenue and Fifty-second street, a very handsome \$12,000 residence; for B. R. Welch, a three-story brick and basement residence at a cost of \$40,000; for J. P. Smith a three story stone residence on Lexington avenue and Fifty-third street at \$30,000; for A. Woodruff, on Kimbark avenue and Forty-ninth street, a \$20,000 residence; for G. R. Putnam, two dwellings at \$12,000 each, on Forty-eighth street and Kenwood avenue; for Mr. Thorn a three-story-and-attic residence, on Forty-eighth street, at a cost of \$10,000; for William H. Kehoe, on Drexel boulevard near Forty-fourth street, a \$35,000 house, and for himself, a \$11,000 frame residence, containing twenty-two rooms, on Monroe avenue, and five houses on Fifty-sixth street and Monroe avenue, at a cost of \$25,000. Mr. Wilson has been associated in business with others for many years, first with his brother Oliver Wilson, and afterward with his present partner, Charles S. Crow, who bears the reputation of being an excellent workman. Mr. Wilson married Miss Sine Johnson, by whom he has four children. He is a member of the A. O. U. W.

Edward Hudson, a contractor and builder of Chicago, with office at 3201 Wabash avenue, is a native of Perth, Canada, his birth occurring on the 26th of June, 1842. His father, Edward Hudson, Sr., was also a builder, but worked at his trade in Canada, in which country he was called from life, May 2, 1875. The subject of this sketch was reared and educated in the land of his birth, being an attendant of the public and parochial schools. He was apprenticed with his father until twenty-two years of age, during which period he acquired a very thorough knowledge of his trade. He came to Chicago in 1865, and worked as a journeyman and foreman for six years, being in the employ of F. H. Avers during this time. In 1872 he began business for himself, in partnership with John A. McLennan, but at the end of eighteen months this partnership was discontinued, and Mr. Hudson has since been in business alone. He was awarded the contract for the Dickey building at the corner of Lake and Dearborn streets; the Ogden and Sheldon buildings; the McCormick building at the corner of Dearborn and Randolph streets; the Western Indiana depot; St. James church; the De La Salle Institute, at the corner of Thirty-fifth street and Wabash avenue, and the fine residences of John A. Tyrall, E. G. Asa, Rev. Father McGuire, Lickenberger's and John A. Greer's, and St. Elizabeth's church, Forty-first street and Wabash avenue, besides numerous other prominent residences and business blocks, etc. Mr. Hudson came to Chicago with a few hundred dollars in money, but, besides this capital, he possessed an abundant supply of energy and pluck, and no mediocre position would satisfy him. He ranks among the first-class contractors of this city, and is a member of the Boss Carpenters' association. He was married in 1869 to Miss Margaret A. Tovey, a native of Perth, Canada, by whom he has six children: Edward A., Anna H., John F., Mary R., Clara A. and Charles W. Mr. Hudson owns the handsome residence in which he lives, and several other pieces of fine property.

J. W. Cassell, of the firm of J. W. Cassell & Co., contractors and builders, No. 510 to 514 Madison street, was born in Woodford county, Ky., in 1831, and when a mere youth began learning the trade of a carpenter, a trade which he followed in the state of his birth until 1872, when he removed from Lexington, Ky., to Chicago, for the purpose of erecting a building at 86 Michigan avenue, for which he had contracted. This property was part of the Goodlow estate. Upon fulfilling his contract, Mr. Cassell concluded to cast his fortune in the "city by the lake," and in 1880 removed to his present place of business. The firm of which he is now a member was organized in 1879, the other members being J. C. and J. W. Prince. The residences and business buildings erected by these builders have been numerous, and the satisfaction which they have given is sufficient recommendation of the quality of their work. They have put up some of the most substantial and ornamental churches in the city, and their residences are ornaments to the different localities in which they are situated. They have a good jobbing trade, and, it is almost needless to say, are doing a thriving business. They build on an average thirty buildings per year, and their work gives employment to about one hundred men, over whom the members of the firm have personal supervision. Among some of their most important structures may be mentioned the Presbyterian church

at the corner of Orchard and Center streets, the Trinity Episcopal church on Michigan avenue; the Fulton Street Methodist Episcopal church; the Park Avenue Methodist Episcopal church; the Methodist Episcopal church on Lincoln Street; the buildings at 200 Randolph street and 100 Wabash avenue; M. E. Page's place on Lake street (rebuilt); the J. V. Farwell building; the Lewis buildings on Wells street; the E. O. Excell block, Forty-fourth and Ellis avenue; the M. O. Farr building, at the corner of Madison street and California avenue; H. H. Kohlsaats' building, Prairie avenue and Thirtieth street; Clark's building, Washington boulevard and Paulina street; the structures at 150, 510, 512 and 840 Madison street, and numerous other prominent buildings. Mr. Cassell and his partners are members of the Builders & Traders' exchange and the Master Carpenters' association. Mr. Cassell is a true Christian in every sense of the word, and is a member of the Fulton Street Methodist Episcopal church. A true gentleman, he is, instinctively, courteous and obliging in his intercourse with his fellow-men. Miss Mary Leads became his wife in 1857, and by her he has a family of two sons and two daughters: J. W., Jr., who is an engineer on the Chicago, Milwaukee & St. Paul railroad; James W., who is a practicing physician and surgeon of New York city, a graduate of Bellevue Hospital Medical college; Mattie T., the wife of George W. Stewart, and Jessie K., a teacher in one of the public schools of Chicago. Mr. Cassell's second marriage took place in 1883, his wife being Miss Mary Corbin, of Lexington, Ky.

To America the Emerald Isle has given some of her best citizens, and it is to her that the city of Chicago is indebted for one of her representative carpenters and builders. James C. Prince, who belongs to the firm of J. W. Cassell & Co., was born in the city of Dublin, August 1, 1838, his parents, James C. and Jane (Barrett) Prince, being also natives of that place, the former a carpenter and builder by occupation, who, in 1849, immigrated to Canada, but at the end of two years became a subject of "Uncle Sam," and took up his abode in Cincinnati, Ohio, but a short time later located in Cleveland. From that city he came to Chicago in 1853, but four years later removed to Michigan, and in 1859 to St. Louis, Mo., where he passed from life in 1870, when about sixty-two years of age. He was the third largest contractor of his native city, and while a resident of the state of Ohio he was appointed state treasurer for public buildings, a position he filled with the most satisfactory results for about two years, in the meantime doing the inside finishing work of the State capitol of Ohio, a piece of work of which one might well be proud. His wife, the daughter of an extensive boot and shoe merchant of that city, was born in Dublin. She passed from life in the state of Missouri in 1879, when about sixty-five years of age. Mr. James C. Prince is the second of eleven children born to them, of whom nine are now living. He received his education in the schools of Cleveland, Ohio, and at the age of fifteen years began learning the carpenter's trade under his father, with whom he worked until May, 1861. At that time, as he had become warmly attached to his adopted country, in the time of her peril, and upon Lincoln's call for troops, he enlisted in Company C, of the Eighth Missouri, entering the service as second sergeant, and was on active duty until disabled in 1863, when he was placed in the veteran reserve corps and served out his time in Company B, Eleventh

veteran reserves. He was mustered out of service at Washington, D. C., after which he returned to St. Louis, Mo., and, for the benefit of his health, spent a short time on a farm near that city. He afterward engaged in carpentering and building in St. Clair county, being associated with his father in this work, until March, 1868, after which he came to Chicago and has resided here since. The year of his arrival here he became a foreman in the employ of John Wilson, with whom he continued until after the great fire of 1871, when he began business for himself, and has since relied on his own resources for the accumulation of a competency. His name has been closely identified with the building interests of this city, in which he has ably filled some important contracts, his work, in every instance, giving the utmost satisfaction, a fact which speaks highly in his praise in this city of magnificent buildings. Mr. Prince is of strictly moral habits, is an earnest and prominent member of the Baptist church, and has never used whisky or tobacco in any form. He has always been an uncompromising republican in politics, and has at all times supported the men and measures of his party, voting the straight ticket on all occasions. He belongs to the George H. Thomas post No. 5, of the G. A. R. His marriage, which occurred in 1871, was to Miss Jane I. Andrews, who was born in Deep River, Conn., in 1848, and their union has resulted in the birth of three sons and one daughter: Edward J., Albert W., Nelson B. and Eva J. Mr. Prince's interests are centered in this city, in the growth and prosperity of which he has taken much pride, and here he expects to make his home during the balance of his life.

Joseph W. Prince, of the firm of J. W. Cassell & Co., contractors and builders, was born in Toronto, Canada, November 15, 1847, and is the seventh of eleven children, of whom nine are now living. He was brought by his parents to Chicago in 1855, and consequently has seen this city grow from a small town to its present gigantic size. In 1865 he began learning the carpenter's trade with his father, and later, from 1869 to 1871, he was engaged in this business with his father. From 1871 to 1875 he lived near St. Louis, Mo., and during the summer was engaged in farming, the winter months being spent in working at his trade. From 1875 to 1877 he lived at Belleville, Ill., and worked there also at his trade. He returned to Chicago in 1877, and for about two years worked at the carpenter's trade here, but has, since 1879, been the junior member of the firm of J. W. Cassell & Co. He is a member of the Builders & Traders' exchange and the Chicago association of Master Carpenters. He was married in May, 1882, to Miss Mary A. Lenfestey, who was born in Quebec, Canada. They have four children: Barrett L., Ethel May, George W. and William Ray. In politics Mr. Prince is independent. He and his wife are members of the Methodist Episcopal Church. Mr. Prince is a practical man, steady, able and reliable, and is well known to the building fraternity. While he was yet an infant he was taken by his parents to Cincinnati, Ohio, and later to Cleveland, but, in 1855, was brought to Chicago, where he received a fair education in the public schools. The father is a native of Dublin, Ireland, where he was born in 1811. He died in 1871, near St. Louis, Mo. He learned the trade of carpenter and builder in his native land and became famous as a churchbuilder and was a man of unusual uprightness of character. The mother was born in 1813 and died in Arcadia, Mo., in 1879.

J. W. Woodard, alderman for the Second ward, is one of the most successful contractors and builders of Chicago, and resides at 2459 Wabash avenue. He is a native of Springfield, Ohio, where he was born in 1846, and is the son of Lorenzo D. Woodard, who died when J. W. was about three years of age. He was educated at Springfield, but had only limited advantages, and was compelled to rely upon his own endeavors at a very tender age. At the age of sixteen years he was apprenticed to learn his trade at Dayton, Ohio, and after the completion of his term of service he entered the carpenter shop of Barney & Smith, car manufacturers, with whom he remained two years. He then moved to Bloomfield, Ill., and worked at his trade with fair success until 1872, when he came to Chicago and for a short time worked by the day. In 1873, fired with the pluck which has always distinguished him, he began business at his trade independently and continued thus successfully for some time, when the firm of Woodard & Reese was formed, but in a short time was dissolved and Mr. Woodard has since continued alone. He employs an average of about forty men throughout the year, and has done a large and noticeable amount of work in Chicago and its suburbs. He has been the contractor of the works of Irondale, the South Chicago dock works, the works of Willard Sons at South Chicago, the large steamfitting establishment of Wier & Crugs, the removal of Libby prison from Richmond to Chicago, and in addition to this he has contracted for numerous buildings of the better class and styles. He is a practical man, full of good humor and sagacity, and is absolutely self-made and a credit to this enterprising city. In 1887 he served as chairman of the executive committee of the Carpenters' association, and has done noticeable service in keeping within bounds the important strikes since that period, and in 1890 he was again a member of the executive committee. He is a member of the Builders & Traders' exchange and of Home lodge, A. F. & A. M., Lafayette chapter No. 2, R. A. M., Chevalier Bayard commandery No. 52, and is a member of Medina temple, R. A. O. Nobles of the Mystic Shrine. Socially, he is highly esteemed, and is a jovial companion and trusted friend. He was married in 1864 to Miss Anna King, who died in 1867, leaving a daughter named Emina. In 1869 he married Miss Anna S. Hill, by whom he has two sons: Henry C. and John H. She died in 1888. In 1890 he was again married, his present wife having been Mrs. Anna Fisher, a native of Springfield, Ohio. Mr. Woodard served three years in the army during the Rebellion, a part of the time in the Sixtieth Ohio infantry and later in the Eighth Ohio cavalry. In politics he is a republican. His popularity was attested in 1891, by his election as alderman from the second ward, though he had never posed as a politician or consented to accept office before.

Murdoch Campbell is of Highland Scotch ancestry and was born in the township of West Hawkesbury, Prescott county, province of Ontario, Canada, February 15, 1841, the son of John and Christiana (McCrimmon) Campbell. His education was begun in Canada. He arrived in Chicago September 11, 1857; and, besides attending the Ogden school, in the north division, learned the carpenter's trade with Heeney & Campbell, general contractors and builders and manufacturers of sash, doors and blinds. He was with that firm for a long time, during the last six years of his connection with them having charge of their work and



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being superintendent of their factory, and during this time he thoroughly qualified himself in all branches of the trade, thereby peculiarly fitting himself to direct the large and prosperous business of which he later became the head. The business was originally organized in 1873 by Murdoch and Alexander Campbell, under the firm name of Campbell Brothers, for the prosecution of a general contracting and building business. A year later they admitted William McRae as a partner, and the firm name was changed to Campbell Brothers & Co., and commenced the manufacture of sash, doors and blinds, in addition to the other business. The partnership was continued until 1878, when Mr. McRae retired and the remaining partners resumed the name of Campbell Brothers. In October, 1880, their factory at the southwest corner of Van Buren and Franklin streets was totally destroyed by fire, and the following January, Campbell Brothers Manufacturing Company was incorporated with a capital stock of \$25,000, with Murdoch Campbell as president, Alexander Campbell as vice president and superintendent, and Hiram T. Jacobs as secretary and treasurer, the factory being at the southwest corner of Ohio and Franklin streets. The company at once launched out into a large and prosperous trade, and many substantial business houses and elegant residences erected and fitted up by them testify to their ability and skill in executing fine and durable work. A few of these are the residences of Judge Skinner, J. C. Bullock, Joseph Medill, A. J. Kirkwood, F. H. Hill, Hiram Kelly, R. W. Tansill, Lewis Russ, M. M. Hirsh, Bruno H. Goll, L. W. Fick, and many others in Chicago and its suburbs. Their business steadily increased from year to year until their large factory, fully equipped with all the latest and most improved machinery, employed upward of two hundred and twenty-five men the year round and did a business exceeding \$300,000 annually. In April, 1888, Murdoch Campbell retired from the active management of the corporation and has since devoted his attention exclusively to the general contracting business. Associated with him in this business is his son, Archibald M. Campbell, and his nephew, Angus J. C. Ledgerwood. They have done a prosperous business and the following are among the many buildings erected by them: The grain elevator of Stein, Hirsh & Co., at Hammond, Ind.; the warehouses of Swift & Co., Gen. W. C. Newberry and estate of W. L. Newberry, and Jacob Rosenberg; the factory buildings of Henry Disston & Sons; the Heywood & Morrill Rattan Company and Leopold Mayer's; the foundries and machine shops of the McCormick Reaper Company, and Ruppell Brothers, Cragin, Ill.; the car shops of the Street's Western Stable Car Line Company; alterations at the grand stand at the Washington Park race track; The Wellington hotel; the National Live Stock bank building; the residences of Frank Alsip and J. P. and W. P. Ketcham; the retail store of Marshall Field & Co.; and the Martin A. Ryerson block. Mr. Campbell belongs to the Masonic fraternity, and is a member of Pleiades lodge No. 478, A. F. & A. M., Wiley M. Egan chapter No. 126, R. A. M., Chicago commandery No. 19, Knights Templar, and the Illinois Council Royal Arcanum; is a vice president of the La Salle club of which he has been a member four years; and is an honorary member and was first treasurer (about 1868) of the Highland Association of Illinois. He has also served as treasurer of the blue lodge and chapter in the Masonic order for eleven years. He is a member

of the Builders & Traders' exchange, of which he has been a director, and of the Carpenters & Builders' association, and since 1860 has devoted his time and energies to the advancement of the building arts. Mr. Campbell was married January 30, 1867, to Miss Jeanette B. Caldwell, of Bloom, Ill. They have four children; Archibald M., Abigail K., M. Josephine and John Albert.

Benjamin J. Young & Son, contractors and builders, 220 Customhouse place. The senior member of this firm is a native of New Jersey, and was born at Elizabeth May 19, 1836, to Hezekiah and Cornelia (Jarvis) Young. He was educated in his native city, and there learned the carpenters and builders' trade, with Asa B. Chandler. In the fall of 1855 he came to Chicago, and found employment with Henry Vreeland until August, 1856, when he went to Jacksonville, Ill., and there continued working at his trade. He was married at Jacksonville, in January, 1859, to Miss Mary, daughter of Robert and Catherine (Springer) Anderson. In March, 1861, he moved to Chicago, and resumed his trade, working principally for Moody & Church until 1866. He then moved to Mason City, Ill., and there engaged in business for himself. In the fall of 1871 he returned to Chicago, and worked at his trade as journeyman until 1874, when he entered a partnership with George Forster in the contracting and building business. They continued together very successfully until January 1, 1891, at which time he sold out to Mr. Forster and started in business with his son, B. H. Young, with their office at 220 Customhouse place, under the style of B. J. Young & Son. Mr. Young has been exceedingly successful in business, and is well known in Chicago as a scientific workman. He has built many dwellings in different parts of the city, and overhauled and renovated many important business buildings and blocks. He has had born to him five children: Robert H., Annie E., Benjamin H., Katie M. and Phebe J. (deceased). Mr. Young and family are members of the Christian church, and he is a member of the Odd Fellows fraternity, and in politics is a republican.

Steinmetz & Eilenberger, builders and contractors and manufacturers of sash, doors, blinds, moldings, frames, stairs, etc., have their office at the corner of Throop and Hinman streets. The business was established in 1874 by Mr. Steinmetz, whose establishment was at the corner of May and Twenty-second streets, but the present firm was organized in 1879, and began business at Twentieth and Rockwell streets. Later, their grounds were encroached upon by the Santa Fe railroad, and in May, 1890, the firm removed to their present place of business, where they purchased and improved a valuable piece of property suitable for their factory. While Mr. Steinmetz was engaged in the manufacture of sash, doors and blinds from 1874 to 1879, Mr. Eilenberger was contracting and building. In 1879 they combined the two interests, since which time their mill has been run only to supply material for their own contracts, among which may be mentioned several blocks on Union and Washington streets, the Haymarket theater and several churches and large warehouses. In 1884 they fitted up the buildings for both presidential conventions, and in 1885 fitted up the hall in the Exposition building for the opera festivals, many public school buildings and a large number of a good class of residences. Among their office structures worthy of mention are the

Owings building, on Dearborn street; the old Dearborn building, on the present site of the Inter Ocean building; Haskill's Dearborn building; Haskill's block, at the corner of Prairie avenue and Thirty-first streets, besides a great many other handsome buildings of this city; the Keeney & Odell building, at the corner of Rush and Ohio streets, and the McCormick building, on La Salle street. They employ on an average of three hundred men throughout the year, and are, themselves, constantly employed in carrying out their contracts. Mr. Steinmetz was born in Germany in 1839, and came to America in 1854, locating in Springfield, where he learned the sash and door manufacturing business in an establishment of that city. He came to Chicago in 1865, and until 1874 had charge of shops for different firms. In 1865 he was married in Hartford, Conn., to Miss Hermina Kleinecke, by whom he has two sons: Henry, who is in business with his father, and John, who is employed in the National Bank of America. Mr. Eilenberger was born in Germany in 1845, and from his native land came to America in 1872. He had graduated from the polytechnic school at Leipsic, and even at that time was a practical builder and contractor. He was a general contractor up to the time the firm was organized. In 1876 he was married to Miss Elizabeth Knapp, of Chicago, by whom he has six children. Mr. Eilenberger is a member of the Carpenters & Builders' association and the National union, as is also Mr. Steinmetz, the latter being a Royal Arch Mason.

John F. Tregay, contractor and builder, has his office at 40 South Peoria street, and has been a resident of Chicago since the 14th of February, 1872, his birth having occurred in Cornwall, England, in 1847. His parents, John and Charles (Meager) Tregay, came to Chicago from England in 1880, by their son's (John F.) request, and both died here, the father from being run over by the cars in 1887, and the mother, of apoplexy, July 11, 1881. They were the parents of three sons and eight daughters, five daughters still living, two of whom are yet residing in England. John F. Tregay was educated in the schools of his native land, and there also learned his trade and worked at the same until he came to America. At the time of the great Chicago fire he was living in Manchester, England, and had his mind made up to travel and make an extensive trip through Italy, Russia and many other points of interest throughout the Old World, but on going to his place of business one morning he saw, posted up on the bulletin board, a notice of the great fire of Chicago, in which eighteen thousand people were burned to death. He immediately changed his plans and sailed from Liverpool to America, en route to Chicago. He landed in the city of New York, but came directly to this city and soon secured employment with a subcontractor, who beat him out of nearly all his wages for some time. For about two and a half years thereafter he worked as a journeyman, and, in 1874, began business for himself at 176 West Madison street, and has done business in this immediate neighborhood ever since. He does a general jobbing, repairing and reconstruction business, and is always kept busy, keeping employed, during the busy season, about fifteen men. Mr. Tregay is a member of the Carpenters & Builders' association, of which he is a director. During the big carpenters' strike, which lasted from April 7 to September 13, 1890, he was chairman of the executive committee,

during which time he did some noble and effective work. His services were warmly appreciated by his friends, who, in December, 1890, presented him with a handsome gold watch, on which was the following inscription: "From appreciative friends of the Carpenters & Builders' association, December, 1890." It has also a monogram on each side of the case, his initials, "J. F. T.," and "C. & B. A." This token of esteem and friendship was fully appreciated by Mr. Tregay. He was married in 1883 to Miss Celia M. Jennings, of English parentage but of American birth. She was a teacher in the public schools of Chicago prior to her marriage. She has borne her husband three children, two of whom are living: John and Ethel. Celia L. is deceased. Mr. Tregay is a Knight Templar in the Masonic fraternity, and he and his wife are members of the Centenary Methodist church, in which he is steward and one of the official board. He has always been interested in the cause of Christianity, and for a number of years was one of the directors that gave Sunday afternoon lectures.

H. A. Dowling, an able and experienced contractor and builder, who has his office at room 22, 150 Washington street, is a native of Canada, born near Hamilton in 1863, son of Thomas Dowling, who is also a native Canadian. The latter was an extensive contractor of the Dominion but afterward went to Cleveland, Ohio, about 1868, in which city in a very short time he became well known as a contractor. In the fall of 1871, on the night following the breaking out of the Chicago fire, he landed in this city, and here soon succeeded in finding plenty of employment and carried on business alone for some time. Subsequently the firm of Thomas Dowling & Son was established, which lasted until the death of the father which occurred October 20, 1886. The firm was then changed to Dowling Bros. & Co. and continued as such until the spring of 1887, when the brother, John W., died, and since that time the firm has been known as Dowling & Rutherford and as such has prospered. The father was a member of the Builders & Traders' exchange and of the Masonic fraternity. He and his sons did the work for the Oriental consistory (or thirty-second degree) hall. R. A. Dowling was principally educated in the public schools of Chicago, learned his trade with his father and has followed this calling with profit to himself and to the satisfaction of his patrons ever since. He is a member of the Builders & Traders' exchange; is a thirty-second degree Mason, and is a member of Ellis lodge of the I. O. O. F. As a builder Mr. Dowling ranks among the foremost, for his work is of a most substantial character and is well calculated to stand the ravages of time. He is conscientious and faithful in fulfilling his contracts and has come to be relied upon by those who are interested in building.

J. L. Rutherford, of Dowling & Rutherford, contractors, room 22, 150 Washington street, was born in Canada, in 1859, a son of James Rutherford, also a native and still a resident of Canada. He there received the principal part of his education and partially learned his trade. In 1878 he came to the States, spending the subsequent year in Little Rock, Ark. He came to Chicago in 1879, and for six years was a superintendent for Thomas Dowling & Son. He began contracting for himself, with R. A. Dowling as a partner, in 1886. Mr. Rutherford is an extensive and reliable contractor, and some of the finest buildings in the

city have been constructed under his immediate care and reflect great credit upon his ability, business activity and thorough knowledge of his calling. He is a member of the Builders & Traders' exchange, and the Carpenters & Builders' association, and is one of the inspectors of election in the former order. He belongs to the Masonic fraternity. Mr. Rutherford has been rated as one of Chicago's foremost contractors for a number of years and to be satisfied that he fully deserves this reputation it is but necessary to look upon the evidences of his handiwork.

J. W. Andrews, carpenter, builder and contractor, No. 2833 Cottage Grove avenue, is a native of England, born in 1846, and came to Chicago in 1872. For the past fifteen years he has been actively engaged as a contractor and superintendent for architects. It is nearly twenty-five years since he founded his present enterprise, and the success that has attended the venture has been fully merited. The premises he occupies with his business comprises a three-story brick building 40x60 feet in size, well equipped throughout with the most improved wood-making machinery operated by steam power, a well-stocked lumber yard adjoins the factory, and has an area of 150x200 feet. A force of from fifty to seventy-five hands is employed, and the products of the concern embrace sashes, doors, moldings, blinds, stairs and all descriptions of builders' millwork. Mr. Andrews carries on general operations as a carpenter, builder and contractor, undertaking work of any magnitude, furnishing plans, specifications and estimates promptly on demand. He has done the carpenter work on numerous buildings of all classes in different parts of the city, among them C. F. Gunther's building, 212 State street; and other well-known business buildings. Among his many residences and flats may be mentioned Lewis Morris' residence, Polk street and Ashland boulevard; two blocks of eleven houses for John Morris, president of the John Morris Company, on Groveland avenue and Thirty-first street and Vincennes avenue and Thirty-sixth street respectively; a block of three houses for Martin Barbee, northwest corner of Prairie avenue and Thirty-second street; a block of three houses for George H. Fox, northwest corner of Prairie avenue and Thirty-second street; a block of three houses for Mr. Roos, on Scott street, near Astor; the residence of W. A. Giles, Michigan avenue, between Twenty-fifth and Twenty-sixth streets; the residence of F. A. Hibbard, on Grand boulevard; two blocks of flats for W. W. Clay, on Oakenwald avenue; two houses on Astor street, near Banks, for Messrs. Sunny and Fisher; the residence now occupied by Rev. Dr. Loeke, on Indiana avenue; a flat building for Mrs. Henrietta Loveland, 3713 Indiana avenue; a block of thirty-five flats for the Johnson estate, on Wells and Pearson streets. Mr. Andrews is a member of the Builders & Traders' exchange, and a director of the Carpenters & Builders' association, and has long been prominently identified with the improvement of his part of the city. He is also a prominent member of the Royal Arcanum, National Union and Sons of St. George.

Andrew M. Mangson, carpenter, contractor and builder, and manufacturer of sash, doors, blinds and interior finish, with factory and office at 139 Blackhawk street, was born in Sweden in 1842, and there he was educated and learned the carpenter's trade. In 1868 he emigrated to the United States and located in Chicago, since which time this city has been his home.

In 1871 Mr. Mangson began the contracting business in Chicago, and in February, 1891, he began the sash, door and blind business. He employs from twenty to fifty men, as his work demands. The work of Mr. Mangson in the way of carpenter contracting has, for the most part, been that of erecting factories and business blocks. However, in his twenty years of business he has put up many residences and has done the carpenter work for eight school buildings in the city. Among the many buildings he has put up may be mentioned a large building on Superior street, between Wells and Franklin, for the Newberry estate, and one for the same estate at the corner of Illinois and Franklin streets; two buildings for the Adams & Westlake Manufacturing Company; a large building for Mr. Cox, at the corner of Erie and Wells streets; a building for E. W. Blatchford, at the corner of Clinton and Fulton streets, and a linseed oil storehouse for a Mr. Gates. He also did the carpenter work for the Western Wheel works. His contract for this plant amounted to about \$50,000. He has put up hundreds of buildings in the city. He has been a member of the Builders & Traders' exchange since soon after its inception. He has made his own way in life and been remarkably successful. He has valuable property on Schiller street and in Lake View. He is recognized as an enterprising, upright and honorable man of good business qualifications and is well and favorably known. He was married in 1871 to Miss Sophia Wiekstrom, and to them these children have been born: Edward W., Theodore L., George F. and Florence V. He is a true republican in politics.

An industry of first importance in a rapidly growing city like Chicago is that represented by the contractor and builder, and there are many talented followers of this vocation in the city. One of the most prosperous and successful master carpenters and builders located here is Mr. M. O. Williams, 549 Wells street. Mr. Williams is a thoroughly practical workman, experienced in every detail of the business, and capable of taking charge of any work, however much skill may be required in its completion. A native of England, born in 1851, he came to this city in April, 1872, and in 1877 established his business here, in which venture he has met with deserved success. His workshop and lumber yard are spacious, having an area of 50x205 feet, and equipped with every adjunct necessary to the business. Employment is given to a force of efficient workmen, and a general business is carried on in building and carpentering work of all kinds, house and roof repairing, store fixtures, etc. A specialty is made of contract work, estimates are promptly furnished, and all undertakings entered upon are carried through to completion expeditiously, carefully, and in the most satisfactory and workmanlike manner. Fair in his prices, honorable in all his transactions, Mr. Williams well merits all the patronage that may be tendered him.

Francisco Blair is one of Chicago's ablest and most excellent carpenters and builders and is located at 2948 Vernon avenue. Since starting in business for himself, he has made marked success in contracting, and has given unusual satisfaction both to architects and owners. He constructed the Dale building on Dearborn street, but his work has been mainly confined to fine residences and to flat buildings. He has lately completed a \$40,000 residence for J. P. Gardner, at Forty-eighth street and Greenwood avenue. He is thoroughly reliable

and follows the directions of his architect with scrupulous fidelity. He has been contracting in Chicago for fourteen years and is well and favorably known. He is a member and an ex-vice president of the Builders & Traders' exchange, and a member and present vice president of the Carpenters & Builders' association. He is also a member of Apollo commandery and fraternizes with the Odd Fellows, being a member of Ellis lodge, No. 447, in which he is past grand, and in this order he is past grand guardian of Illinois. He was born in 1847, and is a son of James Blair, who was a farmer by occupation and died in Indiana in 1855. In that state Francisco was reared and principally educated. He grew up on the farm and at the age of fifteen years was apprenticed to learn the carpenter's trade. He came to this city in 1856, and until 1877 worked by the day, but at that time began business for himself. He was married to Miss Frances B. Farrell, by whom he has five children: James H., Kitty, Florence, Frank and Thomas. His father's family consisted of two sons and two daughters, all of whom were deprived of the support of their father in their youth by his death. Francisco was thus thrown at the age of nine years on his own mental and moral resources. In early life to make both ends meet, he followed any honorable calling, from driving an ox team to cutting saw logs, and by steady and persevering diligence he attained his present and honorable and enviable business and social position. He is entirely self-made, and is a fair sample of the brain and brawn of this grand young city. His mother is living in Chicago, aged sixty-eight years.

Alexander Anderson is a successful carpenter and builder of this city. He is located at 159 La Salle street, and his box at the Builders & Traders' exchange is 174. He was born in Edinburgh, Scotland, in the year 1841, and in youth received but a limited education. At the age of fourteen years he began serving an apprenticeship of five years at the carpenter and joiner's trade under John Waterson & Sons of that city. At the end of seven years he went to Glasgow, where he worked successfully at his trade, perfecting himself in construction work for seven years. In 1870 he left Glasgow and came across the Atlantic, going directly to Albany, N. Y., where for one year he worked on the new state house, which cost nearly \$25,000,000. Succeeding this he returned to Scotland, but six months later came to the United States, proceeding at once to Missouri, where he remained until the great Chicago fire. In March following the fire he went to work for Heeney & Campbell on Twelfth and Canal streets, and later worked at his trade for several other firms. In the year 1878 he established a small jobbing shop on Madison and Honore streets, working early and late with true Scotch grit. From small beginnings his business steadily expanded until he has now reached an honorable place among the best builders of Chicago and has a large permanent and active trade. Some of the prominent buildings he has constructed are the following: Third Presbyterian church, after it was destroyed by fire; the Church of the Ascension at the corner of Elm street and La Salle avenue; the Church of the Redeemer at the corner of Warren avenue and Robey streets; the First Regiment armory at the corner of Sixteenth street and Michigan avenue; the interior work of the Chicago Theological seminary at the corner of Ashland and Warren avenues; the Evanston club house; the Dunshee flats on Oakwood

boulevard and Vincennes avenue, together with many large and elegant residences within the city and outside of it. He lately built a large boat, which is to be used as a club house at north pier.

George B. Goodall, a contractor and builder, who conducts his extensive operations with eminent skill and executive ability, was born in Rock county, Wis., near Janesville, in 1850, a son of Milo B. and Harriet Irene (Hill) Goodall, natives of New York, both of whom are dead. His father served through the Rebellion in the First Iowa cavalry. In his youth Mr. Goodall was taken by his parents to Iowa, and was reared at Fayette and educated in the common schools of that place. At the age of fifteen years he began to learn his trade there, and served a three-years' apprenticeship, after which he was employed for another three years in helping to build up towns along the line of the Milwaukee & St. Paul railroad. In 1872, soon after the fire and not long after he had arrived at the age of citizenship, he came to Chicago. For a short time he worked by the day, but he was too able and too ambitious to remain long in a subordinate position, and it was not long before he had been made foreman for William Kennedy, and later for Hall & Manning, in which capacity he was employed by them for several years, during which they erected quite a number of the important buildings put up in the period after the fire. Subsequently he was employed by Charles Morris, of the Garden City Fire Works, having full charge of the wood department of that concern through an active period, in which they built many leading structures in different parts of the city. While in Mr. Morris' employ he attended night-school, taking up the study of architecture and geometrical drawing, not for the purpose of becoming an architect, but to familiarize himself with all the details of practical building; and he attributes a good deal of the success he has met to the careful training he received at the hands of Professor Hanstein of the Atheneum. After remaining seven years with Mr. Morris, in partnership with W. J. Anderson, his brother-in-law, he engaged in business on his own account, and they erected and sold many residences. In 1885 this connection was severed, and Mr. Goodall removed to Spokane Falls, Wash., where he did a large and successful building and contracting business for two years. Returning to Chicago, he at once reëntered business here, and has been contracting and building continuously since, having erected from first to last some two hundred beautiful and substantial buildings. Among the prominent structures built by Mr. Goodall may be mentioned the Goodall apartment building, at the southwest corner of Cottage Grove avenue and Bowen avenue, a very handsome six-story structure, which is described and illustrated in another portion of this work. He has erected also an elegant and commodious flat building on Polk street, and has recently finished the woodwork of a large residence on Washington boulevard, one of the finest finished in the city. A present contract is a large block of buildings on Warren avenue, to be finished in hardwood. He makes a specialty of hardwood finish, a prominent example of his work in this line being the Western Trust savings bank. Mr. Goodall's position on the labor question is well known, and it is worthy of remark that he is one of the few Chicago contractors whose business operations have been undisturbed by strikes. Mr. Goodall is a Thirty-second degree Mason,

and a member of the shrine, St. Bernard drill corps and commandery. He was married in 1876 to Miss Jennie Anderson, daughter of William and Margaret Anderson, and has two sons, named Milo B. and Frank A.

The well known and enterprising firm of Hynes Bros., 3643 State street, was established in 1880 by Frank F. and Thomas H. Hynes, the latter of whom died in December, 1886, the business being now continued by Frank F. and William A. Hynes. The firm are contractors and builders, and undertake all work in the line of construction, taking contracts for new work, and for remodeling and jobbing in all their branches, and furnishing complete estimates, plans and drawings. But the most important element in the trade of the house is the manufacture of the Burrows' cold, dry air refrigerators, of which they are the exclusive makers and patentees. This refrigerator is superior to all others in the market, having many special advantages peculiar to itself. These refrigerators are largely used in Chicago and vicinity, in private houses, hotels and sample rooms, etc. The factory is a large and conveniently arranged building, fully equipped with every modern appliance, and all new machinery, and employment is given to a force of about fifteen workmen. The total area covered by the factory is 80x110 feet. Mr. Frank F. Hynes is a native of Wisconsin, has resided in Chicago about twenty-five years, and is a thoroughly practical builder.

Nicholas Treff, contractor and builder at South Evanston, is a prominent and successful follower of his calling. He was born in Luxemburg, Germany, in 1841, and in his native land grew to maturity, receiving a thorough education in the public schools. At the age of sixteen he began a three-year apprenticeship at the carpenter's trade, but while learning its details received very little compensation for his services. After completing his apprenticeship he worked as a journeyman in France, and in 1867 came to America and came at once to Chicago, arriving here in May of the same year. At the end of one year he went to Evanston and began working at his trade with James C. Connor, which connection continued harmoniously for eleven years. In 1881 he established himself in business at South Evanston, and among the many fine buildings erected by him are the following: St. Nicholas church at South Evanston; handsome residences for Messrs. Miller, Siekle and Poppenhausen; about twenty-five houses for Gen. Julius White; the South Evanston town hall building, besides numerous others equally as handsome and substantial. His work has been very extensive and is strictly first class, and he keeps constantly employed a large force of experienced and competent workmen. He is a member of the Foresters, and he and his family worship in St. Nicholas church, of which they are respected members. In 1879 he was married to Miss Anna Britz, of Rose Hill, and they are domiciled in their comfortable and pleasant residence in South Evanston.

John F. Schmidt, contractor and builder, of South Evanston, is a native German, born in Holstein in 1847, a son of Hans H. and Anna Schmidt. He grew to maturity in the land of his birth, attended the public schools, and when sixteen years of age became an apprentice to learn the carpenter's trade, receiving as compensation for his services his board. In the meantime he began the study of architecture in an institute of building arts, and at the

age of twenty-two years he came to America, and almost immediately to Chicago, arriving in this city in 1869. He secured employment in a cabinet factory, and it was not long until he had advanced himself to the position of foreman and superintendent of construction. About 1874 he established himself in the manufacturing business, and until 1879 was engaged in the manufacture of fine cabinet work and office fittings, his factory being at the corner of Washington and Jefferson streets. At a later period he manufactured brushes. In the spring of 1881 he went to south Evanston, where he began following the trade of a carpenter, and has erected many of the substantial and handsome buildings of the place, among which are Smackel's block, of which he is also the architect and builder; the business house of Charles Gipps, of which he was architect and builder; he drew the plans and erected the fine residence of Mr. Wheeler, on Chicago avenue, also the fine residence of Charles Betts, on Judson avenue; two beautiful and substantial houses for Mr. A. G. Breed at the corner of Hinman avenue and Dempster street, and planned the elegant and commodious residence of Mrs. Gillespie, on Judson avenue. Mr. Schmidt has done an immense amount of building, all his work being of a superior class and showing a thorough understanding of his business. His success in life is due to his own efforts, as he began at the foot of the ladder. As a builder, he is well known throughout the city, and commands respect from all who know him.

John F. Rees, a general contractor and builder, was born in the city of Philadelphia, Penn., November 5, 1832, and is the son of Morgan and Elizabeth (Davis) Rees, both of whom were natives of Wales. The mother died at the advanced age of eighty-seven years in 1888, at Salina, Kas. The father had died in Ohio, in 1868. These parents came to the United States in early life, and settled in Philadelphia, where John F. was born. He was the third of eight children, four of whom are living. He received in youth a limited education, and in 1849, having gone to Ohio, began learning the carpenter's trade, and continued perseveringly at that occupation until 1854, when he located in Bloomington, Ill. He spent eight years in Louisiana, three years in the interest of machinery for the manufacture of sugar, and for five engaged in the manufacture of tile, brick, etc., from clay. In 1881 he came to Chicago, and since then has been engaged here in general contracting. The years from 1858 to 1860, inclusive, he spent in Colorado in prospecting and mining, and during that period had many rough but interesting experiences. He asserts it to be a fact that in 1859 he cut, with a whip saw, the first board manufactured in Colorado, twelve feet long and twelve inches wide, and that he built the first quartz mill in Colorado. It was erected for Shearer & Co., of St. Louis. At present he is contracting in Chicago extensively, and has a high reputation, and is possessed of first-class business methods and is prospering. He was married in 1863 to Miss Esther C. Hill, a native of Bloomington, Ill., a daughter of William Hill, a native of New Jersey. Mr. Hill established the first paper in Bloomington, called the *Observer*, now the *Pantagraph*. Some years later he founded the *Missouri Democrat*, now called the *St. Louis Globe Democrat*. He died in 1890, at the age of seventy-nine years. Mr. and Mrs. Rees have been the parents of three children: Frank C., now deceased, Abbie B. and William H.

John Carrick is a skillful and successful carpenter of this city, but in his line of work he makes a specialty of stair building since becoming a resident of the United States. He was born in Northumberland, England, and was educated in the village school near the place of his birth. Coming to the United States, he has been since 1881 a more than ordinarily successful carpenter and builder of Chicago, and during his business career here has built the stairs for some of the handsomest private residences and business houses. One of the most noteworthy is the stairs in the Calumet club house, at the corner of Twentieth street and Michigan avenue. Mr. Carrick was married in Dent, Yorkshire, England, in 1871, to Miss Jane Capstick, by whom he has three children: John, who is now working at stair building; Margaret, who goes to high school, and Agnes, who is attending the Armour street school. Mr. Carrick is engaged in contracting on quite an extensive scale, is painstaking, active and enterprising, and employs on an average of fifteen men the year round.

William Seydel, contractor, carpenter and cabinetmaker, whose office and shop was located at No. 153 Twenty-first street, was prominent in this line of business. His business career was begun twenty-nine years ago in Germany, although he began working at his trade in Chicago, only about nine years ago. In a short time he won a very large and lucrative patronage. He was a practical and experienced workman, having learned his trade in his native country. He employed only good workmen, and did all kinds of repairing neatly and satisfactorily. As a contractor and carpenter his job work was unsurpassed. He came from Germany in 1881, and after sojourning for half a year in Philadelphia, he came to this city.

Michael Fahey, carpenter and builder, has his shop and residence at 3532 State street, and has been a resident of this city since 1867. He was born in Kilkenny, Ireland, in 1847, and was there educated and served an apprenticeship at his trade, working from the time he was eleven years old up to the time he was twenty-two years of age in the land of his birth. In 1867 he sailed from the city of Waterford to Liverpool, England, thence to Portland, Me., coming to this country on the steamer Austin, making the trip in fourteen days, a very short run for that period. He soon went to the city of Boston, then to New York, where he worked five weeks for Bogart Bros., but owing to a strike for eight hours of labor per day, he left that city and came to Chicago, and here was fortunate enough to secure employment with John P. Neill, but only remained with him a short time, his next employer being David Coy. After being in the service of different parties for a number of years, he took charge of Benjamin Lombard's business, and for four years successfully conducted his lumber interests, his employer devoting his attention to banking. In 1882 he began contracting for himself, and has since continued, winning a high reputation as a successful builder. Owing to the reputation he soon established, he was given the contract for the O'Brien & McDermott stone front building on State street; a building on Prairie avenue; a building for F. C. Gibbs, on Thirty-first street and Cottage Grove avenue; an office for C. P. Thomas; three buildings for W. J. Ackerman; a stone front at Forty-fifth and Indiana avenue; a restaurant for Dan Corkery, and a building for Mr. Barnes, of brown stone, at 23 and 24 Dearborn street; a stone building of four flats at 3509 Wabash avenue, at a cost of \$14,000. Each flat is composed

of from four to eight rooms, all of which are finished in hardwood, plate-glass bay windows, and handsomely and conveniently arranged for living rooms. He built the residence which he now occupies at 3532 State street, which is a well constructed and substantial building. He is one of the leading builders of the city, and has won the reputation of being a very competent workman, his buildings being noted for the substantial manner in which they are constructed. He is a member of the Carpenters & Builders' association. He was married in Chicago January 13, 1878, to Miss Elizabeth Hughes, who is also a native of Ireland, but was taken by her parents to Canada when five years of age, coming to Chicago upon reaching her twentieth year. To them four daughters have been born: Mary, Kittie, Belle and Lizzie.

Cesaire Gareau, one of the most popular and successful of Chicago's carpenters and builders, was born in Terre Bonne, near Montreal, Canada, January 3, 1844, his father's name being the same as his own. The latter was a French Canadian, his ancestors having come to Canada from Lyons, France, about a century and a half ago, or in 1720. The paternal grandfather was a general lumber jobber from Lower to Upper Canada, which was quite a prosperous business in those days, and rafted his logs down the Ottawa river. This calling was also followed by Cesaire Gareau, Sr., who is now resident of the city of Terre Bonne, near Montreal. Of a large family of children born to him and his wife, nine are still living—six sons and three daughters. Cesaire Gareau is the eldest son of his family, and was brought up in Canada, his education having been acquired in Masson college, Terre Bonne, from which he graduated in the primary or commercial course. In 1869 he came to Chicago and soon obtained the position of foreman with William Goldie, with whom he remained for about six years, after which he entered the employ of P. J. Sexton, and was also with others until 1882. He then began business on his own account and has continued the calling of a carpenter and builder ever since, the first two years in partnership with a Mr. Clements. He built the Snell block, on Bryant and Lake streets; the Sprague, Warner & Co. building, on Seborn and Desplaines streets; Sherwood's, Goldsmith's and Henry Shearer's beautiful residences, besides many other elegant homes on Ashland boulevard; the residence of James D. Marshall on Jackson street, besides numerous others throughout the city and suburbs. He is now erecting the A. E. Kent four-story block on the corner of Forty-third street and Calumet avenue; a block for the Caruthers, on the corner of Schiller and Clark streets; ten four-story buildings for Berry, the candy manufacturer, at the corner of Twelfth street and California avenue; the largest livery barn in the city, for E. D. Morse, on Van Buren street; three three-story-flat buildings on Warren avenue; a three-story flat building for T. J. Lyon at 113 Lincoln street; a three-story building for G. P. Barron, at 401 Taylor street; and in partnership with E. J. Lewis & Dumont, is erecting eight stores, three stories high, on the corner of Ogden avenue and Wood street. He is also the contractor for the carpenter work of the A. J. Stone building on Madison street, Ogden avenue and Ashland boulevard, the tallest and most artistic structure on the west side. Mr. Gareau is a member of the Builders & Traders' exchange, and of the Carpenters & Builders' association and for two years he was a director of the Carpenters & Build-

ers' exchange. He was married November 1, 1870, in Chicago, to Miss Angele Bisson, by whom he has two sons and a daughter.

Alex. M. Allen sustains a wide reputation as a contractor and builder, being reliable, painstaking and thoroughly practical, as there is ample evidence to show. His office is at room 75, 162 La Salle street, and his residence is at 45 South Ashland avenue. He was born in Luzerne county, Penn., in 1858. His father was Charles Allen, a coal miner of that state, but a native of Scotland, who died in California, where he went in 1859, and where he was engaged in mining gold. His wife was formerly Miss Margaret McMillan, a native of Scotland. Alex. M. Allen was reared in his native state, but as he was left fatherless in early youth, his school days were cut short, and he was obliged to engage in coal mining at the early age of thirteen years. After continuing this business for about three years, he began learning the trade of a carpenter at Pittston, Penn., and later went to Bradford, Penn., where he was contracting in the oil regions for about three years, during which period he made considerable money, and, simultaneously with it, an excellent reputation, which he has carried out during his business career in Chicago. Upon coming West, in the spring of 1880, he located in Champaign, Ill., in which place he entered a school of architecture with the intention of making that art his profession, but an excellent opening being then offered for a contractor, he decided to continue his course in this branch of the building interests in Chicago, and came to this city in 1883. The two subsequent years he spent as foreman for Campbell Brothers, but since that time he has been in business on his own responsibility, and to him have been awarded the contracts for many of the fine dwellings and business houses of this city. He had done a large amount of work for Edward Corrigan, and did the work for the Odd Fellows biennial encampment on the lake front in 1890, the amphitheater, which had a capacity of thirty thousand, being completed in seven days. Mr. Allen is the owner of about thirty-five lots in the city of Chicago, on some of which are erected houses. He is unmarried.

The following admirably constructed and substantial buildings, which add much to the beauty of Chicago, were erected by John Morrell, who is a leading carpenter, contractor and builder of the Garden city, and nearly all of them are from his own designs: The residence of A. Ziesing, Ashland avenue (Ravenswood), 754 West Monroe street, 610 and 612 Lincoln avenue; the residences of R. Burke and D. MacNaughton, Prairie avenue (Austin); 1719 Fletcher street, 1491 and 752 West Monroe street, 401 Sheffield avenue, 1185 Wrightwood avenue, 32 Best avenue, 1271 Lyman avenue (Ravenswood), 116 West Fortieth street, 375 Bissell street, 222 Sunnyside avenue (Ravenswood), 480 Lewis street. These structures are excellent testimonials to his skill and thorough knowledge of his business, and in every instance show that he is an adept at his trade, devoting all his energies to the proper erection of his buildings. He was born near Leeds, in Yorkshire, England, January 6, 1854, to Samuel and Elizabeth (Ward) Morrell, the former an honest and successful tiller of the soil. He learned his trade in England, and the principles of building construction and the different styles of architecture used in that country. In 1880 he came to America and settled in

Chicago, and, after working at his trade a number of years, in 1883 began contracting and building, a calling to which he has since successfully devoted his attention. He has built up his enterprise on the merits of his work, his ambition having ever been to succeed by doing an absolutely honest business. He was married in Toronto, Canada, to Miss Elizabeth Ann Wheldon, a daughter of William and Margaret Ann (Hepple) Wheldon, both of whom were from Yorkshire, England. To the union of Mr. Morrell a son and daughter have been born: Sarah Wheldon and Albert Henry. He and his wife are consistent members of the Methodist Episcopal church, he being a trustee of the Deering Methodist church.

H. Peterson is a carpenter and contractor at 3226 State street, who has become well and favorably known to the building fraternity of Chicago. He was born in Sweden in 1855, and in the public schools of his native land was educated, there, also, acquiring his knowledge of the building art. In 1879 he sailed from Malmo to America, landing at New York City and coming direct to Chicago, where he worked by the day until about 1884, when he became associated with Charles Inghund, and the firm of Peterson & Inghund existed until February, 1888, when Mr. Inghund died. Since that time Mr. Peterson has been in business alone and has done an extensive and prosperous business. He keeps a large supply of builders' hardware, does a general jobbing business, and also takes a number of building contracts. Mr. Peterson deserves much credit for the success he has achieved in life, for on coming to Chicago he had but little capital and no acquaintances or friends, but now has all. His reputation as a workman is irreproachable, for he not only thoroughly understands his trade, but is very conscientious and painstaking in his work, and as a just reward is now living in comfortable circumstances. He was married in 1887 to Miss Annie Anderson, by whom he has two children. He is a member of the Carpenters & Builders' association, and has a thorough and practical knowledge of his trade, while his promptness and reliability marks him as a most desirable gentleman with whom to have business relations.

Alexander Gordon, of the firm of Gordon & Cooil, carpenter contractors, was born in Scotland December 7, 1838, and went to Canada at the age of eight years. There he learned the carpenter's trade with his father, and worked at it until 1864, when he came to Chicago, and for two seasons worked at this trade by the day. Succeeding this he worked as foreman for three different firms, but in 1884 began contracting independently under the firm name of Gordon & Cooil, which partnership is yet in successful existence. They have erected buildings for O. S. Ricordson; three houses for Mrs. Dow, on Pine street; six houses for Mr. Cady; the Western Transit Company's warehouse, on Kinzie street; a flat building for Miss Riddell; buildings for Mrs. Holman, on La Salle street; and for John Featherstone; did all the woodwork for the Dunlave building, on Wabash near Jackson; constructed a large building at 1636 Michigan avenue; some good buildings on Orchard street, both stores and flats; others of a similar character on Western avenue and Twenty-eighth street, and numerous others. They are doing an active business and are steadily widening their operations. Mr. Gordon is eminently practical in his methods, careful in his business habits, and accordingly gives the best of satisfaction. Few business men of the city are

more active and energetic or able than Mr. Gordon. He was married in Canada, in 1862, to Miss Mercy Chartraw, and by her has four children: Merey, Peter A., Margaret and Maud. He has been a member of the Builders & Traders' exchange for two years, and is also a member of America Lodge No. 107 I. O. O. F. of the Prairie council No. 870, Royal Acanum. He owns some good real estate in the city. His father, Alexander Gordon, was a Scotchman, who died in Canada in 1889 at the age of eighty-two years. His mother was Jane Elmslie, also a native of Scotland, who died in Canada, aged fifty-five years. Personally, Mr. Gordon is genial and popular with all who know him, his qualities being of the kind that wear and gain appreciation from extended acquaintance.

Joseph P. Beretta, contractor and builder at 66 Illinois street, came to Chicago in 1881, and after working by the day for a short time, became foreman for J. T. Hastings, with whom he remained for a period of two years. He then began contracting for himself and the success which attended his labors fully warranted him in continuing this line of work, and he has been a successful contractor and builder ever since. He is one of the foremost builders of the city and designed and was contractor for all the inside work of the Italian church and for the carpenter work on the outside and for the plastering. He drew the plans and contracted for the interior work of the Immaculate Conception church, of which Father Butler is pastor. This is said to be a very handsome and finely finished church and attests in an eloquent manner to Mr. Beretta's taste and skill. He also erected fine dwellings for the following gentlemen: Michael Cincei, Mr. Filitti, Mr. Raggio, Mr. Leoni and for Mr. Cartwright, on Illinois street, besides the double house for John Chiappi, and numerous other like buildings. His time has been fully occupied with his business and his services, both as a designer and contractor, have been in demand, for he has much of the artistic ability and taste for which men of his race are famous. He was born in Italian Tyrol, September 2, 1856, and was there educated in his native language and learned his trade, serving an apprenticeship of several years. His father, Paul Beretta, who was also a contractor, was his instructor. Joseph P. Beretta sailed for America in 1881 by the Anchor line and landed at Boston, but soon after went to New York, and after visiting several of the leading cities of the United States he finally reached Chicago, where he now lives. After coming to this country he thought it advisable to at once begin learning the English language, and with this end in view attended night school, both public and private, until he had accomplished his purpose and was enabled to carry on his business as he wished. Before leaving his native land, he had studied physics, geometry and all branches of mathematics, and besides inheriting the artistic talents of his countrymen, he is of a poetical turn of mind and is the composer of some verses of considerable merit, one poem which he composed upon leaving his native land being especially meritorious. His father was an influential man, well known throughout his native land and held the prominent position of second mayor for twenty-five years. He was also a delegate to the public convention on three different occasions. Joseph P. Beretta is a talented musician and has devoted much of his leisure moments to the study of music in all its branches. He was chosen by the Italian people to represent them on the occasion of the Silver jubilee and made a speech at the

Auditorium in the Italian language. He is also a draughtsman of more than ordinary ability and has made many designs for handsome and noted public buildings. He is a member of the Roman Catholic church, and is proud to remember that in childhood he never disobeyed his parents, who reared him with judgment and care, and for whom he retains the highest respect and affection. He is a member of the Foresters, and is secretary of the Catholic order, Court Assumption No. 50, C. O. F.

Adolph Marchand is a carpenter and builder at 367 West Taylor street, and is also an extensive dealer in dressed lumber, sashes, doors and moldings. He began to contract for buildings in 1885, and to him have been awarded the contracts for the following buildings: One on Nineteenth street and Blue Island avenue; one on Thirty-second and Halsted streets; one on Thirty-fifth and Halsted streets; a four-story double building for William H. Drake, architect, on Van Buren street; a fine four-story building on Twelfth street and California avenue; the Wolsterdorf building on Ashland avenue; William Harrison's residence on Ellis avenue near Thirty-ninth street; a residence for Mr. William H. Drake, at 48 Lake avenue; Mrs. E. Grant's four-story residence, at Hinsdale, Ill.; Coogan Bro.'s building, at Polk street and Sacramento avenue; E. Kennedy's residence, on Jackson boulevard near Albany avenue; a four-story store building, on Clark street near Belmont avenue, and the following now in course of erection: Two four-story store buildings on Wabash avenue; four four-story store buildings on Milwaukee avenue, and a three-story residence on Winehester avenue. Mr. Marchand takes great pride in the excellence of his work, and accordingly has built up a large and prosperous business. He gives employment to thirty or forty experienced workmen throughout the year, and is, himself, constantly and profitably employed. He was born in Quebec in 1837 to Peter Marchand, a tiller of the soil, and on his father's farm he was brought up. He received a good education, and at the age of seventeen years started to learn the carpenter's trade in his native town. After serving an apprenticeship of four years, he came to Chicago and for some time thereafter he worked as a foreman for some of the best contractors of the city, in which capacity he served with credit to himself and to the satisfaction of his employers. He is a member of the Builders & Traders' exchange, the I. O. F., and belongs to Notre Dame church. Prior to leaving Quebec he was married (about thirty years ago) to Miss Emily Valin, and is the father of five children.

Ole Christenson, carpenter and contractor, at 66 West Huron street, was born in Norway, October 8, 1846, to Christian and Ellen Christenson, who lived and died in their native land. To them a family of three sons were born, of whom Ole was the second. He remained in his native land until 1862, when he sailed for Canada, and for a short time was a resident of Gaspé. In the early part of 1863 he came to Chicago and enlisted in the Sixty-sixth Illinois regiment, in which he served until the close of the war. He was in the battles of Nashville and Franklin, besides numerous minor engagements and skirmishes. Upon his return to Chicago, at the close of the war, he began serving an apprenticeship at the carpenter's trade with Hayfield (John W.) & Johnson, the former of whom afterward became United States senator. Mr. Christenson after serving his time and thoroughly learning his trade, was

employed by the firm of Hayfield & Johnson as foreman, continuing for them in this capacity for eight years. At the end of this time he became foreman for William Goldie and F. H. Avers, and also spent much time in the employ of others, the time thus spent amounting to about eighteen years. In 1885 he engaged in contracting for himself. He has done a general business, and has built nearly all the houses in the community in which he resides. In addition to this he erected the block on Schiller street near lake shore, and Ostrom's buildings on the north side, besides many others. In fact he has gained a reputation as an honest, conscientious and painstaking contractor that has placed him in the front rank of his calling. All the stone-front houses on Clark and La Salle streets from North avenue to Eugenie street, were put up by him, a fact, which is a sufficient guarantee of the excellence of his work. In 1870 he was married to Miss Julia Johnson, by whom he has a family of nine children.

Charles E. Carlson is a name that commands the respect and confidence of the carpenters and builders of this city, for here he has successfully worked at that trade since 1880, his box being 360 Builders & Traders' exchange, and his office room 39, 177 La Salle. He was born near Stockholm, Sweden, in 1857, to Charles and Catherine Carlson, also natives of that country. The father, a minister of the Baptist church, filled the pulpit in Sweden for nearly thirty years. He came to America in 1881, and located at Sister Bay, Wis., where he is now the pastor of the Baptist church. His three sons and two daughters reside in this country; Charles E., Anna (wife of Rev. Charles Palm, of Evanston, Ill.), John (a mechanic), Hilda (wife of Henry Broad) and Joseph. Charles E. Carlson was educated in the public schools and colleges of Sweden, in which country he also learned his trade. He came to America in 1880, sailing from Liverpool and landing at New York City. He then came to Chicago and here his first work was done for John Wollacott & Son, in whose employ he was for some time, acting in the capacity of foreman for the last few years. In 1885 he engaged in business for himself, and his operations since that time have been attended with very satisfactory results. He was awarded the contract for the First Swedish church (Baptist) on the north side; a six-story apartment building on the south side, for C. M. Smith, besides numerous other finely constructed and handsome buildings in all parts of the city. He is a member of the Builders & Traders' exchange, and the Carpenters & Builders' association. He was deacon and trustee of the First Swedish Baptist church. He was married in 1882 to Miss Carrie Janson, a native of Sweden, by whom he has three sons: Joseph, David and Emil.

James A. Boyland is a highly successful architect and builder at 431 Ogden avenue, and came to Chicago in 1880, and for six years worked by the day. Since 1886 he has been engaged in contracting and building for himself, and has done a successful and lucrative business. He has constructed, among others, the following buildings: St. Mary's mission, apartment buildings at the corner of Twenty-second street and Hoyne avenue, and Twenty-second street and Leavitt, flat buildings on Polk street and Claremont avenue, Harrison and Lytle streets, Sawyer and Twelfth streets, and Filmore and Albany streets, and the Lincoln

Park sanitarium. In all his work he shows excellent powers as a manager and superintendent, being well able to handle and control large numbers of workmen. His services are held in high demand among builders and property owners. He is a native of London, England, where he was born October 5, 1862, and is therefore yet but a young man, with much of his success yet to be achieved. He was brought to Canada by his parents in 1863, and first located in Montreal, where both parents died. The father was a carpenter of considerable skill and a man of more than ordinary intelligence. James A. Boyland was educated in Montreal at the public schools, and there learned the carpenter's trade, which occupation he pursued in Canada for five years, and then came to Chicago. He is a member of the Carpenters & Builders' association, and is already well and favorably known to members of the craft. He is the owner of considerable real estate, although when he came to Chicago his circumstances were meager. He is active, energetic, able and unquestionably deservedly takes high rank in building and business circles.

John D. Corlett is a notable contractor and builder and a member of the Builders & Traders' exchange, and does all kinds of jobbing properly connected with his trade. He is one of the most active of the local builders, and justly merits the high esteem in which he is held for the excellence of his work. He resides at 1514 Byron street, and his box at the Builders & Traders' exchange is 415. He was brought to Chicago in 1853, by his parents, from New York; but was born in Connecticut, June 28, 1851, being a son of Robert and Ann (Gaune) Corlett. For twenty years the father was in the employ of the Air Line Elevator Company of this city, but died in 1881, aged sixty-three years. John D. Corlett was educated in Chicago, and here learned the carpenter's trade in the employ of John McEwen. Succeeding this he worked for William Mavor for five years, and during that time was his most efficient foreman. During this period he largely increased the knowledge of his trade, fully qualified himself to undertake anything, no matter how difficult, in his line of business. For the past five years he has been engaged in contracting, and has erected some of the most intricate and substantial buildings here. Among them are three flat buildings for John R. True on Fullerton avenue near Halsted street; ten fine residences for B. F. McConnell, on Orchard street near Fullerton avenue; a beautiful residence for the last named gentleman on Newport avenue; the fine residence of Henry Brady on Roscoe street; two large flats for Mr. Druker on Wrightwood avenue near Seminary avenue; a large stone front residence for Louis Hugel, on Wrightwood avenue near Clark street; residences for Robert Griffith and J. D. Bray on Byron street; three extensive flats for Robert Griffith, on Seminary avenue near Wrightwood avenue; a large and handsome residence for E. E. Goodrich, at Prospect park; a commodious barn for Reebie Bros., on Sheffield street near Lincoln avenue, and a very handsome house for himself on Byron street. All these buildings evince in an unusual degree the ability of Mr. Corlett in his trade. His buildings are substantial and give the best of satisfaction. He has been a member of the Builders & Traders' exchange for four years, and is a republican in politics, his first presidential vote having been cast for Abraham Lincoln. He was married June 28, 1875, to Miss Elizabeth C. Baker of Oconomowoc, Wis. They have one child B. A.

Mr. Corlett is a member and one of the trustees of the Lake View Congregational church. He is also a member of the Congregational club. He is essentially a self-made man, and has property valued at from \$40,000 to \$50,000 and owns a handsome home in Oconomowoc, Wis.

It is truly said that a good workman always has a demand for his services far beyond his capacity for labor. Be this as it may, F. D. Fitch, the well-known Park Manor architect and builder, has more contracts already on hand than an ordinary worker could possibly fill in the time given. Mr. Fitch, however, is not only a careful, conscientious architect and builder, but a fine executive, and bears the reputation of being a man of his word. Aside from this, he is genial, companionable and popular. During the season of 1889 and 1890 he drew the plans and supervised the work on some of the handsomest residences that have ever been erected in Park Manor or vicinity. Mr. Fitch's work in the past speaks for itself. He it was who built the handsomely designed three-story brick Fitch block on Sixty-seventh street, near South Park avenue. Mr. Fitch also built two very pretty residences for himself on Prairie avenue and three on Sixty-eighth street, which he has since sold. At Seventy-first street and Rhodes avenue he has also erected a charming residence, which he has recently sold. On South Park avenue, between Sixty-ninth and Seventieth streets, are also two very elegant homesteads of Mr. Fitch's work, that are finished in antique oak and splendidly planned for the convenience of the housewife, one of which Mr. Fitch is now occupying. Still another expensive dwelling that has sprung into existence through the creative genius of the Park Manor builder is the residence of Mr. Babeuf, on Vernon avenue, between Sixty-eighth and Sixty-ninth streets. Mr. Fitch is now building a clubhouse for the Woodlawn club, at Woodlawn, which will cost about \$40,000, and a fine stone front residence for Reuben Jenkins, on North Normal Parkway, near Stewart avenue, to cost \$12,000.

J. D. Hallock, carpenter contractor, at 275 Sacramento avenue, is a member of the Builders & Traders' exchange, and was born at Albany, N. Y., in 1862, receiving his education in the public schools of that city. At the age of thirteen years he began learning the carpenter's trade, and served a three-year apprenticeship, after which he worked as a journeyman until 1887, working in 1885 and 1886 for the well-known and successful firm of J. W. Cassell & Co. In 1887 he began contracting on his own account, and has since continued, with good financial results. A store building, 152 State street, for D. L. Streeter, a block for McGurn & Sullivan, at the corner of Francisco and Fulton streets, and a large livery stable, at 1294 Van Buren street, for Corrigan Brothers, have been among his more important contracts. He has erected many fine residences, among them a residence for Dr. Johnson, at the corner of Fifty-third street and Washington avenue, also two fine flat buildings, on Monroe avenue and Fifty-fourth street, for J. C. Pratt. He is doing a good growing business. His connection with the Builders & Traders' exchange dates from July 1, 1891. He was married in 1884 to Cecilia Fitzsimmons, born at Albany, N. Y., and by her has one son, named Albert. He is a member of Home lodge No. 416, of the I. O. O. F., and a Knight of Pythias. Mr. Hallock has made his own way in life, unaided by propitious

circumstances, and takes creditable rank among the progressive and enterprising building fraternity of Chicago.

Stevens & Sherbrook, carpenters and builders, 7119 and 7121 Greenwood avenue, began business as partners in the spring of 1888, since which time their operations have grown to such large proportions that they have found it quite necessary to make extensive additions to their shop. They have during the past season put in enough machinery to enable them to manufacture and do such mill work as they require for their general contracting business. They were both reared in the mill business and are practical carpenters and joiners, proficient in all branches of the trade, which enables them to handle all work that is intrusted to them, with correctness, dispatch and thoroughness. Their facilities for turning out work are such as to place them among the foremost contractors of the southern part of the city, which is shown by the extent of their operations. They have on hand at the present time some first-class buildings in Hyde Park and Grand Crossing, and in the immediate vicinity of their shop, besides their supply trade, which is increasing. Since they embarked in business they have striven to do what is right and treat their patrons fairly, and the success of their policy is attested by the volume of their business. They give employment to from twenty-five to thirty men, and are always careful in employing the best mechanics that can be had. Mr. Stevens was born in New York, Mr. Sherbrook in Canada, they are both aged about thirty years. They came from Canada together and located in Chicago in the spring of 1881. These gentlemen have won many friends by their straightforward and vigorous business methods, and they are justly ranked among the best class of citizens in the southern part of the city.

Henry Gilsdorff & Sons, contractors and builders, at 57 Metropolitan block, established their connection in 1888, the firm consisting of Henry Gilsdorff and his sons, Guido R. and Edward W. Mr. Gilsdorff is a native of Germany, his birth having occurred near Bingen on the Rhine, in 1833. His parents were natives of Prussia, in which country his mother died. In 1849 the father, with his four children, landed at New York City, after having been on the ocean for several weeks. After remaining in New York for some time they settled at Plymouth, Wis., where the father followed farming until his death in 1861, although he had carried on the builder's trade in his native land. Mr. Gilsdorff received a considerable portion of his education in Germany, and was sixteen years of age on coming to this country; but finished his apprenticeship in Cheboygan, Wis. In 1853 he came to Chicago and was employed as a mechanic until 1862, when he started business of his own responsibility and has carried it on ever since. He is one of the pioneer contractors of Chicago, for this city was a comparatively small place when he located here, and many of the fine residences of this city were erected by him. He has all the work that he can attend to, and has done his full share in building up the city, both before and since the great fire. He is kept constantly employed, and his work, which is usually on intricate structures, has always given the highest satisfaction, and shows that he is an experienced and skillful workman. He employs on an average about twenty men throughout the year. He is a member of the Carpenters and

Builders' Association, and has always manifested a deep interest in the building interests of the city. Among the handsome structures that stand as monuments to his skill as a builder, the following may be mentioned: The residences of Julien S. Rumsey, Perry H. Smith, J. W. Doane, C. K. Miller, John H. Weiss, H. T. Birch, Bigelow estate, Mrs. J. C. Coonley, J. J. McGrath, Leslie estate, H. H. Porter, A. M. Pence, E. K. Rogers, F. H. Winston, M. Ullrich, A. B. Leicht and others, including that of the Northwestern Theological seminary, all of these beautiful homes being models in their way.

David Dudenhaver is a prosperous and efficient contractor and builder and is also successfully engaged in the real estate and loan business at room 809 Operahouse building. He was born in Meadville, Penn., January 27, 1866, and in the public schools of his native town he received his initiatory training. Upon leaving Meadville in 1884 he went to Grand Rapids, Mich., where he learned the carpenter's trade, and later followed this calling in Howard City, Mich. In June, 1889, he came to Chicago, and in the summer of that year engaged in his present line of business. His work has been principally in the suburbs of the city, and many of the finest buildings in Mount Rose, Dauphin Park and Rockford have been put up by him. He also recently erected ten handsome buildings at Jefferson Park, and has done considerable work at Hammond, Ind. His time is fully occupied with his work, and he employs from fourteen to twenty men. He is of a very energetic temperament, and the success that has attended his efforts is owing to his own exertions, for he was thrown upon his own resources at an early age. Since January, 1891, he has been a member of Adelpia lodge No. 8, of the I. O. O. F.

J. L. Bray is senior member of the firm of J. L. Bray & Co., contractors and builders and dealers in sashes, doors, blinds and interior finishings at Evanston. The company does a general line of contracting and building, and put up the fine residence of C. P. Wheeler on Dempster street at Evanston; a handsome residence for Mrs. Whiteley on Hanman avenue, Evanston; the residence of Mrs. Gillespie at Evanston, and many other notable structures. The firm was established in July, 1889, the members composing the same being J. L. Bray and W. L. Boetteher. The former was born in the state of Maine, in 1845, and there grew to maturity, his education having been obtained in the public schools. At the age of eighteen years he enlisted in Company L, First Maine cavalry, forming a part of the cavalry corps of the Army of the Potomac, and with his regiment he participated in many skirmishes and battles, being in the engagement at Stony Creek, Dinwiddie Courthouse and others. In the battle of Five Forks he was very severely wounded, and was taken to the hospital at Washington, and when able was returned to his home, where he was honorably discharged in May, 1865. In the spring of 1868 he came to Chicago, and after a brief stay located at Evanston, where he began learning the carpenter's trade, after which he worked as a journeyman for three years. The winter following the great fire Mr. Bray established himself in business, and although he began on a small scale and with a limited capital, he has always been a competent, honorable and conscientious workman, and gradually built up his present large business. He has made a specialty of residence work and in Evanston the following hand-

some homes stand as monuments to his skill: The residences of Day & Williams, Ambrose Foster, Prof. R. L. Comstock, W. H. Brown, Dr. Ridgeway, Dr. Terry, E. H. Reed, E. B. Dewey and many others; and he has also built many in neighboring towns. In 1888 Mr. Bray added a stock of sashes, doors and blinds to his business, and the following year associated himself in business with W. L. Boettcher, the firm taking the name of J. L. Bray & Co. He was married in Chicago, in 1880, to Miss Alice Luther, of Fredonia, N. Y., by whom he has one child, a daughter. The family worship in the Methodist church.

John A. Connor is a member of the firm of Connor & McCann, contractors and builders of Evanston, Ill., who established their business in the fall of 1890. Although they have only been in business a short time, they are already becoming known as responsible and able contractors and builders, and are rapidly building up a large patronage. They have erected many handsome structures in Evanston, among which may be mentioned a triple residence in South Evanston for W. H. Blake; residences on Judson avenue for Mr. Joy, Mr. Dunham and Mrs. Childs. Mr. Connor is a native of Ireland, born in County Wexford in 1854. At the age of two years he was brought by his parents, James and Anastasia Connor, to the United States, their location at Evanston, Ill., taking place soon after, of which place the father is still a resident. The mother died in 1884. John A. is the fourth of their six children, four of whom are living, and in the town of Evanston he was brought up, receiving a thorough training in the public school of that place, and afterward clerking in a store. After the great fire of 1871 he began to learn the carpenter's trade with his brother, James C. Connor, who for many years was the leading builder of Evanston, and constructed many of the best buildings there. He remained with his brother for several years, finally acting in the capacity of general foreman and superintendent until his brother's death, in November, 1890. The above mentioned firm was then established, with Mr. Connor and Daniel McCann as partners, the latter having also been with James C. Connor for some years. Mr. Connor belongs to the Catholic Order of Foresters, is a democrat politically, and he and his family worship in the Catholic church, of which they are members. He was married in 1877 to Miss Katherine White, a native of Ireland, who died in 1883, leaving three children: Annie, Lillie, and Nellie, who is deceased. In 1885 he married Miss Mary Bowler, a native of Ireland, by whom he has three children: Frank, Loretta, and Theresa (deceased.)

Daniel McCann is a member of the firm of Connor & McCann, contractors and builders, of Evanston, and was born in Belfast, Ireland, July 14, 1862, and is the son of David and Margaret McCann, worthy citizens of that famous island. David McCann, the father, was a bleacher by trade, his operations being confined to the bleaching of the linen products of Ireland. Daniel spent his youth at home, receiving a thorough education in the public schools of Ballymena and later at Belfast, where he attended important night school. He began an apprenticeship at quite an early age at the carpenter's trade at Ballymena and later at Belfast, engaged in working at that occupation, finishing his apprenticeship at Belfast after a service of six years. His first compensation at his trade was twenty-five cents per week, but by the agreement this amount was to be doubled each succeeding year. So closely did he apply him-

self and so rapidly did he advance, that at the end of the first year his employer voluntarily increased his pay to \$1 per week, and at the time of the expiration of his apprenticeship he was in receipt of full journeyman's wages. It was at this time that he attended the night school of Belfast. He was a natural mechanic, and gave up the trades of tailoring and carriagemaking, which he had begun before, in order to follow the natural bent of his talents. In 1881 he came to America, landing at New York in April of that year. He soon afterward came to Chicago and at once went to work. In this active, busy and progressive city he had no difficulty in finding suitable and profitable employment. He remained in Chicago until June, 1881, and in the fall went to Evanston and accepted a position with James C. Connor, and two years later was his foreman, continuing thus until the death of Mr. Connor, in the fall of 1890. In September of that year the present firm of Connor & McCann was organized by Mr. McCann and John A. Connor, a brother of James C. Connor. This firm immediately took up the business and good-will of the former firm, and are now carrying it on with a high degree of success. Their operations are confined to first-class contracts only, and they have erected many of the first buildings throughout the city. They do the largest contracting of any firm in their line in Evanston, and keep constantly employed a large and skilled force of workmen. They have done important work for W. B. Phillips, for J. M. Larimer, for T. C. Hoag, for Daniel H. Burnham, for Theodore Price, W. H. Blake, F. S. Joy, George B. Dunham, Mrs. George Watson and many others throughout the city. In November, 1883, he married Miss Mary G. Kearney, a daughter of Judge G. Kearney, one of Evanston's pioneers and prominent citizens, and now resides on Dempster street. He is a member and chief ranger of St. Charles' court No. 44, of the Catholic Order of Foresters, is president of the St. Vincent De Paul society, and a member of the Business Men's association of Evanston, and himself and wife are members of St. Mary's Catholic church of Evanston. When Mr. McCann was three years of age his parents came to America, but after one year's stay in Philadelphia returned to Ireland, where the father died in 1876, aged about forty-four years. The mother is still living, aged fifty-three. Their family consisted of three sons, Daniel being the eldest. In 1889 Mr. McCann, accompanied by Mr. James C. Connor, enjoyed a European trip, visiting the Mediterranean, Rome, Naples, Alexandria and Cairo, passing through the Suez canal to the Holy Land, where they spent some time visiting the principal historical spots. They were with a party of tourists known as the First American Catholic Pilgrimage, and were gone six months. On his return he visited his native land, passing also through England and Scotland.

William J. Scown is a general contractor of Chicago, and although he has only been in this business on his own account since the early spring of 1890, he has already attained considerable reputation as a reliable conscientious and painstaking contractor. He was born in Detroit, Mich., August 1, 1862, and in the state of his birth he received a common-school education, and learned the carpenter's trade. After coming to Chicago in the year 1879, he worked by the day for some time, and from 1884 until 1890 he was in the employ of C. J. L. Meyer & Sons, filling the responsible and important position of superintendent. In the

spring of 1890 he began contracting for himself, and time has shown the wisdom of this move, for he is now doing a prosperous business, and has shown himself to be a perfectly capable, efficient and energetic contractor, and has proved that he has the confidence of all with whom he has had business relations by the large patronage which he now enjoys. He is practical in his views, and the buildings he has erected stand greatly to his credit. During 1890 he erected several handsome and imposing structures and during that year employed from forty to fifty men. He was married in 1884 to Miss Maggie Jenkins, who was born at Columbus, Ohio, and has borne her husband one child, Edith M. Mr. Scown is a member of Cosmopolitan lodge No. 6 of the Knights of Pythias.

William A. Mills of the firm of Mills Brothers, carpenter contractors and builders, with headquarters at 6800 Michigan avenue, is a native of St. Johns, New Brunswick, and was born in 1855. He was there reared and received such education as was available to him until the age of fourteen years, when he was obliged to begin life for himself. He went to Boston, Mass., where he began to learn the carpenter's trade, and upon completing it, remained at work in Boston until June, 1877, when he came to Chicago and worked at his trade here for nearly nine years. He was superintendent for the well-known carpenter contractor, Francisco Blair, but later engaged in contracting for himself. This he yet continues with abundant success, and many buildings in the World's Fair city have been put up by him. He erected the fine residence of C. B. Buckingham at Lake Forest, the residence of Mrs. Louisa Bowen, on Thirty-ninth street near Cottage Grove avenue, and numerous other elegant residences and substantial business blocks. He is a member of the Builders & Traders' exchange and is recognized as a skillful mechanic, eminently qualified to do any work in his line, and a practical business man. He is an old Odd Fellow and a member of the Loyal Orange institution. Politically he is a staunch republican. He was married in 1878 to Miss Jane Anderson, a native of New Brunswick, by whom he has five children: Frederick, Leonard, Blaine, Edward and William. His parents were William and Caroline (Graham) Mills, the latter of whom died in Canada at the age of forty-four years.

A. F. Diegley, of the well-known contracting and building firm of Furst & Diegley, at 223 Washington street, was born in Peru, Ill., November 29, 1858, a son of George Diegley. The latter sailed from Germany, his native land, for the United States in 1848, at which time he was only twenty years of age. He landed at New York city, and after remaining there a short time went to Allentown, Penn., where he successfully carried on his trade of cabinet making. After a time he turned his attention to contracting, and about 1852 removed to Mendota, Ill., later to Peru, and in 1855 to Chicago. Not liking the outlook in this, at that time, little city, he returned to Peru, where he has since been engaged in contracting. To himself and wife two sons were born, of whom A. F. Diegley is the eldest. Mr. Diegley was reared and educated in Peru, in which place he also learned his trade with his father. In the spring of 1880 he came to Chicago, and worked for some time with Campbell Bros. as a journeyman. In March, 1890, he formed his present partnership with Mr. Furst. They do a general jobbing and building business, and are already winning name and fame for

themselves. Mr. Diegley is a member of the I. O. F., and of the Junior Order of American Mechanics. He was married, in 1883, to Miss Emma J. Bennett, by whom he has one child, Leon. Louis Furst, of the firm of Furst & Diegley, was born in Germany, March 19, 1860, and is a son of Henry Furst, an iron manufacturer, who died in his native land. Of the five sons of Henry Furst, Louis was the third. He was educated in the land of his birth, also learning his trade there, and in 1881 sailed for the United States, taking passage at Antwerp and landing at New York city. After spending a short time in this city, he came to Chicago, and for nine years was in the employ of Campbell Bros. Since then he has been in partnership with Mr. Diegley, and they are now conducting a successful and prosperous business, their principal contracts being for the erection of residences. Mr. Furst was married to Miss Louisa Furst, who is now deceased, having borne her husband one child, Irma. He has attained much success in his building operations, though he came to the city with no capital, but by perseverance and honesty is now in comfortable circumstances, and, better still, has the confidence of his fellow-men.

August E. Fitch, contractor and builder, is a gentleman who thoroughly understands all the details and operations of his intricate business and is in every way qualified to achieve the success he has won. He was born in Germany October 29, 1859, and in 1869 came to the United States alone and went to St. Louis, Mo. to make his home with an uncle. He attended school in that city for a number of years, but at the age of sixteen began learning the cabinetmaker's trade, at which he worked for three years. At the end of this time he began building houses in St. Louis and remained in that city until he was twenty-four years of age, when he went to the Indian territory and for two years was in the employ of the United States government, in the erection of government schoolhouses etc. The two following years were spent in Kansas, after which he took up his residence in Kansas City, in which city he remained for a period of four years, doing a prosperous and active business. May 1, 1890, he came to Chicago and has since been one of the active builders of the city. He makes his own plans and carries them out with an accuracy of detail that is highly commendable. He has already made quite an enviable reputation for himself as a builder in this city and his time is fully occupied in filling his contracts. His views are decidedly practical, and his sound intelligence and vigorous intellect are pushing him rapidly to the front in his calling. He is a member of the Builders & Traders' exchange. He was married in 1883 to Miss Mollie Dollings, a native of Sullivan, Ill., by whom he has two sons: Charles and Earl.

Richard Gerry is doing a good business as a lathing contractor. His box is 116 at the Builders & Traders' exchange. He first came to Chicago in 1862 and has been engaged in his present contracting business ever since 1869. He was born in Boston, Mass., March 1, 1844, and in that city of students and philosophers was educated. At the early age of fifteen years he began to learn the lathing trade, soon acquiring the mastery of that business. Later he went West, and from 1862 to 1869 was engaged in

driving a stage coach in New Mexico and Arizona, and a part of the time was riding a government express, his route extending from Hache's ranch to Fort Bascom, a distance of eighty-five miles, with not a house on the way. His experience in the western country, with its hardships, trials, privations and constant dangers will ever remain in his memory. He is now one of the most extensive lathing contractors in the United States. In many of the largest buildings of the city his work may be found. Among the hotels alone he has had the lathing contracts of thirteen of the largest. Twenty-two years have been spent by him in this city in this business. At the time of the great fire of 1871 Mr. Gerry was working at the northeast corner of Wabash avenue and Twenty-second street, his building escaping the fire. He is a member of the Builders & Traders' exchange, and resides at 661 Larabee street. He was married in 1869 to Miss B. A. Donnellan, who was born in Albany, N. Y., and has presented her husband with one son, Edward J.

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J. G. Amdele

CHAPTER XXI.

DEALERS IN STONE, SAND, FIREPROOFING, PLASTERING,
CEMENT, ASPHALT, LIME AND KINDRED MATERIALS.

PROMINENT in connection with the building history of Chicago for many years has been the name of Gindele, and the firm name of Angus & Gindele has also long been well known. John G. Gindele was born January 30, 1814, in Ravensburg, Wurtemberg, Germany, and died in Chicago in January, 1872. His father, a paper manufacturer, was drafted to serve in the war of liberation against the French, entered France with the allied armies, and died there in 1815 from wounds received in action. His mother married J. A. Muller for her second husband. This gentleman was a commission merchant, had served under Napoleon from 1801 to 1813, and had been a participant in the memorable and disastrous retreat from Moscow. There were four daughters and one son born of this second marriage, and although Mr. Muller was not wealthy, he provided so far as he was able, for his step-son and treated him with exemplary affection. John G. Gindele entered the public schools of his native town, where he was always at the head of his class. At eight years of age he was removed to the Latin school, and at ten was admitted to the higher classes, where he also took the lead, although the youngest in the department. His progress in his studies led his parents to designate him for the church, but his natural inclinations led him in an entirely different direction. He had early exhibited an unusual talent for stonecutting and engineering, and the surroundings of his home were well adapted to the development of his genius. As his stepfather began to realize his aptitude for these pursuits, he gave up the idea of devoting him to theology, and encouraged him in the more congenial occupation of carving. For three years young Gindele worked as an apprentice in the stonecutting establishment at Lindau, Lake Constance, under a skilled master, studying with all the energy of his nature to acquire both a practical and theoretical knowledge of the builders' art. At the expiration of this time his stepfather died, leaving his family in destitute circumstances. Young Gindele's employer gave him his journeyman's certificate that he might support his family from the proceeds of his labor, and he went home and worked with determination to accomplish this end, and the consequences were that he soon began to reap the reward of his previous study and zeal. His plans and models,

many of which came before the city authorities, attracted universal admiration. Through the influence of the city he was enabled to study at the Engineers and Architects' school, at Munich, where, during the summer, he worked on some of the most important buildings, and thus saved sufficient money to defray his expenses of the winter session. He there attracted the attention of the Bavarian government, and was sent by them, at the age of twenty-one years, to Kissingen, to take charge of the public works there, in the erection of a large hall with colonnades, and an elegant stone-arched bridge. While at this place he wedded Miss Louise Hirschheim. He was then employed, for some time, to superintend the work on the canal connecting the rivers Main and Danube. In December, 1838, he was appointed city engineer of Schweinfurt, a position given him for life. The canals there, and the management of the water power, were in the crude style of the middle of the sixteenth century, and their improvement and amplification, according to the principles of three hundred years later, were due to John G. Gindele. He remained there only twelve years. During the revolution of 1848-9 Mr. Gindele stood firmly on the side of the democratic party for the unity of the German empire. When the so-called "Rump Parliament" assembled at Stuttgart and appealed to the people for aid, Mr. Gindele was very active in sending forward five hundred well-armed men from Schweinfurt. The revolution was a failure, and Mr. Gindele was forced to emigrate with his family, consisting of his wife, four sons and one daughter. He first settled in Wisconsin, where, through reverses, he lost almost his entire property. He first had started a flouring mill at Port Washington, which was soon destroyed by fire. He then removed to Milwaukee and opened a monumental marble works.

In July, 1852, he came to Chicago, leaving his family with friends at Milwaukee until he could provide a home for them here. Unable at that time to speak the English language, Mr. Gindele experienced considerable difficulty in getting a start. It was not long, however, until he acquired sufficient knowledge of the language and the people to enable him to secure employment and attract to himself valuable friends. At first he worked in the stoneyard of A. S. Sherman, on Lake street, at \$1.50 per day, and his first job was the carving on the front of the Adsit bank building, on Clark between Lake and Randolph streets. This was the first marble front erected in the city. Soon afterward he executed all the carved work of the four triple windows of the South Side reservoir, little dreaming of the close connection with the water supply of the city that the future had in store for him. As his familiarity with the customs of this country increased, he was employed as draughtsman, and subsequently became superintendent of the Illinois Stone Dressing Company, having in charge the cut-stone work for the more important buildings erected in the city prior to 1859, and conducting the business with his usual skill and ability. In the latter year the company reduced its business and Mr. Gindele established a stoneyard for himself and contracted for several buildings, the most important of which was the south wing and tower of the Chicago university. In 1861, the board of public works being created by an act of the legislature, he was elected as commissioner from the south division for a term of six years, during four of

which he was president of the board. At the expiration of his term he was reelected, and retained the position of president until 1867, when he resigned. During the time he was a member of the board of public works Mr. Gindele was also one of the commissioners of the Illinois and Michigan canal; the famous lake tunnel, with the buildings connected with it, was designed and successfully completed, and many great public improvements were achieved. He also designed the plan for the Washington street tunnel, which was afterward successfully completed. In 1869 the county was oppressed by a great many public officials who were a detriment to the city's progress, and a reproach to the moral and law-abiding inhabitants. So obnoxious had this class become that a citizen's ticket was nominated, and Mr. Gindele was named for the clerkship of the county. He made the race, was triumphantly elected, and occupied the position with the honor and fidelity for which he was so well known. After the great fire he was active in his efforts toward rebuilding the city. In this he was ably assisted by his sons, who were his able coadjutors in many important undertakings. In 1866 the government of Schweinfurt requested Mr. Gindele to send a plan for an important change on the river Main, having for its object the improvement of navigation and the extension of manufacturing facilities. He did as requested and the plan was adopted. The authorities expressed their gratification by presenting him with a beautiful album bound in the old German colors, ornamented with a silver double-headed eagle, and containing views of the principal points of the city and vicinity. The gift was accompanied by an exceedingly complimentary letter. The announcement of Mr. Gindele's death was received by the public with genuine sorrow. Few could have been more keenly missed than this man, whose kindly disposition and quiet, unostentatious life endeared him to all who knew him. He never sought a conspicuous position, but accepted the responsibility of more than one exalted office in the county at the request of the people and filled each with an integrity and ability that defied the assaults of the most rabid and pitiless of his political enemies. His death was a loss to the city and county, and as long as honesty and integrity are respected as virtues, his name will never be mentioned without a tribute to those qualities which he possessed in such an eminent degree. Franz Gindele, eldest son of John G. Gindele, was born January 23, 1839, at Kissingen, Germany. He attended school at Schweinfurt until 1850, when the family came to the United States. He learned the printing business in the office of the *Illinois Staats Zeitung*, and worked there for a number of years. In 1860 he worked at the printing trade in Peoria, Ill., where, at the beginning of the war, he enlisted in the Eighth Illinois Infantry. In 1863 he returned to Chicago, and attended Dyhrenfurth's Commercial college. In the fall of that year he took the foremanship in the *Illinois Staats Zeitung* job printing department. The year 1865 witnessed his marriage with Miss Mary, daughter of Louis Richberg. In 1869 he started a printing office for himself, which he lost in the general conflagration of 1871. Since that time Mr. Gindele has been active in the printing business. In 1883, when the Franz Gindele Printing Company was incorporated, he was elected secretary and manager, which positions he yet holds, his brother, Charles W. Gindele, being president and treasurer.

Ferdinand V. Gindele, second son of J. G. Gindele, also a native of Bavaria, was born July 12, 1842. He came with his father's family to Chicago, where he was educated, in the Scammon school and in other local educational institutions. In 1856 he became an apprentice with the Illinois Stone Dressing Company, of which his father was then superintendent, and he has been connected with the cut-stone business ever since, except four years during the war. In 1867 he established a stoneyard on Franklin street, near Van Buren, and two years later his father and brothers became interested with him in the enterprise, under the style of John G. Gindele & Sons. After the death of the elder Gindele, in 1872, the business was continued by J. G. Gindele's Sons, on Lumber street, near Twenty-second. In 1874 Mr. F. V. Gindele retired, and accepted a position on the Customhouse, in charge of the stonecutters employed in the construction of that building. He was thus employed until February 1, 1875, when he became superintendent of the cut-stone department of the Singer & Talcott Stone Company, and occupied that position until 1881, when he became a stockholder in the Young & Farrell Diamond Stone Sawing Company, then located at Lumber and Twelfth streets. In 1886 the company sold their plant to the Wisconsin Railroad Company, receiving as part payment the site of their present plant, four hundred feet front on the river by six hundred feet deep, on which their works are located, with offices at 30 and 32 West Polk street. This is recognized in the stone and building trade generally as the most extensive cut-stone concern in the world. Its officers are Hugh Young, president; Ferdinand V. Gindele, treasurer and general manager; Henry Struble, secretary; R. C. Harper, manager. Mr. Gindele was married in 1870 to Miss Caroline Haverland, of this city, and has three children: Ida, George W. and Ferdinanda. He is a staunch republican, and is deeply interested in the success of his party, but has never held or sought public office. He and family are members of the Evangelical Lutheran Emanuel church. When the war of the states began, few anywhere were quicker to respond to the government's call for help than Mr. Gindele. April 19, 1861, while the news of the fall of Sumter was still agitating the nation, he enlisted as a private in Company A, First Illinois light artillery, popularly known as the "Chicago Artillery." In 1864, before Atlanta, he was ordered to special duty as clerk, at the headquarters of the second division of the Fifteenth army corps. He participated in that never-to-be-forgotten march to the sea, and was mustered out of service at Washington, D. C., May, 26, 1865, having been in all the engagements in which the western army took part. He is a member of the U. S. Grant post, No. 28, Grand Army of the Republic. George A. Gindele, third son of John G. Gindele, was born at Schweinfurt, Bavaria, June 11, 1844, and came to America with his father's family in 1850, and located at Port Washington, Wis., removing thence to Milwaukee, and to Chicago in 1852. He was educated in Chicago schools, and learned his trade with his father, for and with whom he worked during his early years. His connection with his father, brothers, Mr. Angus and others in the cut-stone and building interests is mentioned elsewhere. He is justly regarded as one of the shrewdest, most ambitious and far-seeing builders in the city, and his record and antecedents are such as any man might well be proud of. He is a republican in politics, but he is in no sense a politician, as



F. V. Lindale

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he is too busy a man to be one. During one period of the war he enlisted in Hancock's regiment, known as the "Chicago Home Guards." He is unmarried. Charles W. Gindele was born in Schweinfurt, Bavaria, April 19, 1847, fourth son of John G. and Elizabeth (Hirschheim) Gindele, and came with his parents to America in 1850. He attended the old Seamon school, on West Madison street, until 1857. At that time the family removed to the south side, and he entered the old Jones school, where he prepared to enter high school. He left school before his course was finished, and spent six weeks in the repair shop of a hardware store. Later, he became a store boy in the employ of Hayden, Kay & Co., wholesale dealers in saddlery hardware, 45 and 47 Lake street, and in the same house rose to the position of shipping clerk, remaining with the house two years. In the spring of 1863, with his parents' consent, he enlisted in Company G, Eighth Illinois cavalry, and was promoted to corporal, and served to the end of the war, when he was honorably discharged. After his return home, he for a time attended Bryant & Stratton's Chicago business college. Before the war, and since, he had acquired considerable knowledge of his father's business.

In the spring of 1866 he accepted a position under L. B. Boomer, and engaged in bridge construction on the line of the then partially built Union Pacific railroad, which had then reached Fremont, Neb., and was connected with the construction of all bridges and enlverts on the road between Fremont and the one hundredth meridian, among them the bridge over the Loup Fork river, at Columbus, Neb., the bridges over the Wood river beyond Fort Kearney, and others of importance. He came back to Chicago in December, 1866, and was again a student at Bryant & Stratton's until the following spring, when he became first street number clerk in the office of the board of public works. In May, 1868, he became a partner in the firm of John G. Gindele & Sons cut-stone contractors. He had entire charge of the erection of the courthouse at Bloomington, where he remained until September, 1869, when he returned to Chicago, where the firm had, then and later, many important contracts including the cut-stone work on the Tribune building, the Masonic temple on the west side, the first Honore block, the original Palmer house, Galbraith's block, the Kohn building, the McCormick building, and numerous other blocks and business structures of all kinds, as well as many residences, for Gindele & Sons at that time did Chicago's leading cut-stone business. At the time of the fire, they were doing the stone mill work for the new Palmer house. The conflagration left Gindele & Sons the only machinery and facilities in the city for the carrying on of a cut-stone business until June, 1872. This was as much a matter of location as anything else, their plant having been situated beyond the reach of the fire, while those of their competitors were so located as to be swept away in the general destruction. After the death of the elder Gindele, in 1872, the business was continued by the firm of Gindele Brothers, composed of Ferdinand V., George A. and Charles W. Gindele, three of the four sons of John G. Gindele. Ferdinand V. Gindele withdrew in 1875, and the two remaining partners continued until January, 1879, when they sold out to Tait & Ralston. During this time they built the present Tribune building, the Reaper block, the Galbraith building at Madison and Franklin streets, rebuilt the McCormick building at Wabash avenue and Wash-

ington street, built Valentine row on Wabash avenue, a large block on Ashland avenue and Adams street, the Rosenfeld and Rosenberg buildings, between Dearborn and Clark streets, and numerous residences, among them Truman's residence of Dearborn avenue. In the spring of 1880 Charles W. Gindele began contracting alone for sidewalk and similar work, having passed the previous winter in the county agent's office. During the summer he received a subcontract for doing the concrete work and laying the sidewalk around the county building, along Washington, Clark and Randolph streets, and he was assistant superintendent of the cut-stone department of custom house construction, 1877-9. In the spring of 1881 the firm of Allen, Angus & Gindele, general contractors and builders, was formed. In November following it was succeeded by that of Angus & Gindele, the partners in which were John Angus and Charles W. Gindele. The only large buildings completed by the former were the general in and out freight houses of the Chicago, Burlington & Quincy railroad, at Canal and Harrison streets, a work involving \$80,000. In 1882 Angus & Gindele built the Chicago, Burlington & Quincy round house, and the largest turn-table in Chicago, at Twelfth and Canal streets, Potter Palmer's fine residence and the Hobbs building. In 1883 they built the Potter Palmer apartment houses and French flats of north State street, the large warehouse of the National tube company at Fulton and Clinton streets, and the elegant residence of C. T. Yerkes, Jr. During 1884 they built the Abraham Knisley factory, the Grand Trunk railroad freight house, the abutments and center pier of the Chicago & Western Indiana railroad bridge across the Calumet river, and the piers for the viaducts over the railroad tracks in the town of Cicero. They were also contractors on the City hall, and did the cut-stone work of the engine and boilerhouses and tower of the city waterworks. They also built the Young & Farrell diamond stone-cutting company's plant at Twelfth and Lumber streets, which cost \$60,000; large additions to Kirk's soap factory; Boal's large store on Kinzie street; Morrison's large "flat-iron" building, on Blue Island avenue, Harrison and Halsted streets; McDonald's flats on the west side; Nickerson's flats on the west side, and Beckwith's flats on Drexel boulevard, and numerous other business blocks, private residences and other buildings. In 1886 Charles W. Gindele resumed operations individually. In 1887 he associated with him Mr. Allen, the former partner in the firm of Allen, Angus & Gindele, under the firm name of Allen & Gindele, and in 1888 Mr. Allen retired, leaving Mr. Gindele again in business alone. The following are among Mr. Gindele's subsequent operations: The building of A. C. Bartlett's residence on Prairie avenue; Dr. Gilman Smith's residence on Calumet avenue; Frank Shepard's residence on Oakwood boulevard; Calvary Baptist church, Kansas City, Mo.; the depot at Milwaukee of the Chicago & North-Western Railroad Company; all the additions to Ferry hall at Lake Forest university; the Dearborn observatory of the Northwestern university at Evanston; a Baptist church at Aurora; a Methodist Episcopal church at Englewood; depots at various places for the Chicago & North-Western Railroad Company (including besides the one at Milwaukee, mentioned above, those at West Fortieth street, Lake Geneva, Wis., Freeport, Ill., and Rochester, Minn.); large warehouses in the city for the same company; warehouses on West Water street between Kinzie and Indiana streets, and several on



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North Water street between State and Dearborn streets. Among his contracts recently completed, or now in hand, are those for a large government building at Winona, Minn., a large library building at Wheaton, Ill., for J. Q. Adams, who will present it, when completed, to the town named, and the gymnasium and art building of the Lake Forest university. In everything pertaining to the interests of builders of all classes, Mr. Gindele has been active and helpful. He was chosen a member of the arbitration committee, which settled the strike in 1886, and remained such until 1889. In the latter year he was made chairman of the joint arbitrating committee between the Chicago Masons & Builders' association, and the United Orders of American Bricklayers and Stonemasons, and served in that capacity until January, 1890. He was president of the Chicago Masons & Builders' association in 1888-9, and was one of the founders, and is one of the directors of the Builders & Traders' exchange. A republican politically, he is inclined to independence in local affairs. He is a member of Aldine council No. 886, Royal Arcanum of Chicago, and of U. S. Grant post No. 28, Grand Army of the Republic. He was married March 26, 1880, to Miss Lucy Elliott Ash, of Amboy, Ill. After the retirement of Mr. Charles W. Gindele, in 1886, Messrs John Angus and George A. Gindele continued business under the name of John Angus until February, 1889, when the style was changed to the old one of Angus & Gindele, and it may be of interest to note that during the past six years the old and new firms of Angus & Gindele have done an exclusively building business. Among recent work may be mentioned the masonry of the big Auditorium building, the Owings building, the Virginia flats, besides numerous other structures of all kinds. This is one of the most enterprising and progressive firms in the city. Mrs. Ida Jordan, only daughter of John G. Gindele, married, and is now the widow of Gustave Jordan.

A representative of the old stone house of Peter Wolf, later Peter Wolf & Son, is Michael Wolf, contractor for sawed and cut stone, office and yard 457 Fifth avenue. A record of steady and substantial progress, extending over a period of forty-one years, marks the history of this notable and flourishing establishment, which contracts for sawed and cut stone of every description and deals in Marquette brown stone, and to which attaches the distinction of being one of the oldest enterprises of the kind in Chicago, as well as one of the leading, most reliable and best equipped concerns devoted to this important branch of commercial activity in the city or state; while the transactions of the concern, which are of a most extensive character, grow apace with years, the house fully sustaining to-day its old-time reputation for excellent stock and honorable dealing. This flourishing and noteworthy enterprise was started in 1850 by Peter Wolf, at Market and Monroe streets, whence it was subsequently moved to Third avenue, where the business was carried on up to 1882, when it was removed to the commodious quarters now occupied, and has here been continued with uninterrupted success. The yard is equipped with hoisting apparatus and the best general appurtenances, while a very superior and immense stock is constantly carried, including sawed and cut building stone of every variety, curbing, coping, flagging, etc.; also Marquette brown stone, the firm opening, in 1869, the first brown stone quarries operated in the Lake Superior regions,

and having been the first to introduce Indiana brown stone, and in a general way, the pioneers of brown stone in this section of the country. The quarries in Indiana, situated on the Chicago & Eastern Illinois railroad, are supplied with heavy steam power and give employment to many hands, while the concern has opened another extensive brown stone quarry in the Hoosier state, and, altogether, its total annual transactions reach a very handsome figure. Among the notable structures for which this well and favorably known concern furnished stone may be named the following: St. Paul's church, Prairie avenue; the Farwell buildings, Monroe street and Market street; Williams Market building, Monroe street; L. Z. Leiter's building, corner of Monroe street and Fifth avenue; though these are only a few of the many.

Horace M. Singer. A name long prominent in connection with the stone trade of Chicago is that of the senior member of the firm of Singer & Talcott, and of the late Singer & Talcott Stone Company. Mr. Singer is a native of Schenectady, N. Y., and a son of John V. and Ann (Collins) Singer, the former of German parentage, and the latter of New England nativity. His father was a canal and harbor construction and an early railroad construction contractor, and as such had much to do with many early internal improvements in the East and in the middle states. Mr. Singer was born in October, 1823. The family located in Ashtabula county, Ohio, in 1825, and in 1836 they removed to Loekport, Will county, Ill., John V. Singer having an important contract in the construction of the Illinois & Michigan canal. Upon that work our subject was employed, under his father's direction, from 1836 to 1840, in the construction of section 64. In 1840 the work was suspended, on account of failure on the part of the state to furnish funds for its prosecution, and Mr. Singer then engaged in teaming, transporting passengers and furniture, merchandise and other freight to different parts of Illinois and Indiana, the rapid settlement of these states at that time rendering this enterprise quite profitable. In 1845, when the construction of the Illinois & Michigan canal was resumed by the trustees appointed to represent the state and bondholders, he engaged in the engineering department of the work, and was so employed until the completion of the canal in 1848. From that date until 1852 he was superintendent, under engagement with the trustees, of repairs on the canal. It was the cutting of the ledge in the construction of the canal that led to the almost accidental discovery of the large stone quarries at the point now known as Lemont; and upon resigning the superintendency of canal repairs in 1852, under the style of H. M. Singer & Co., Mr. Singer began developing them and placing the stone on the market. Maneel Talcott became his partner in 1854, and the business was continued under the firm name of Singer & Talcott until 1872 or 1873, when the Singer & Talcott Stone Company was organized and incorporated. This concern existed until, in 1889, its quarry interests were sold to the Western Stone Company. Mr. Singer's active connection with this company terminated in 1874. The Lemont stone is a stratified magnesian limestone, excellent for flagging and general building purposes; and though the quarries have been yielding up their products for forty years, they now appear to be practically inexhaustible. Mr. Singer has devoted his entire active business career to the development of

the stone interests. He has been a resident here and at Lemont alternately since 1854, and has had a practical and conspicuous part in the growth of Chicago since that date, having been foremost in many beneficial movements, conspicuous in numerous great enterprises, and influential in measures for the public good, and won an honorable reputation as a business man which he prizes beyond any other gains he may have made. His intimate relations with the building trades may be realized when the immense number of buildings and other great improvements into which the Lemont stone has gone are taken into consideration. It may not be without interest to state that down to the time of the great fire no less than seventy-five per cent. of the stone sidewalk flagging put down in Chicago was supplied by his company. Mr. Singer's political career began with his representation of the town of Lemont on the Cook county board of supervisors. In 1866 he was elected to the Illinois legislature, and was two years a member of that body, during which time he served on the committee on canal and river improvements and state institutions, and at an extra session of the legislature he was one of a committee to examine the state penitentiary. Soon after the fire he was elected one of the county commissioners of Cook county, and was chairman of the building committee during the erection of the criminal court and jail building, and during the discussion incident to the selection of plans for the new courthouse. He has been connected with the First National bank since its organization, and was for many years one of its directors. He is a stockholder in the Central Music Hall Company, and has served on its executive and finance committees since its organization. He has always been eminently public spirited and helpful. He is a member of the Union League and of the Calumet club.

Charles B. Kimbell, long and prominently identified with the stone and brick business of the city, was born in Chicago, December 6, 1839, and his parents are still living on their original homestead at the corner of Fullerton and Kimbell avenues. He lived on his father's farm—now well within the city limits—until he was seventeen years of age, and attended the neighboring district schools. The education thus gained was supplemented by a term of practical instruction at Bryant & Stratton's commercial college. Meanwhile, during his fifteenth and sixteenth summers, he taught school at Whiskey Point. In his seventeenth year he entered the employ of Singer & Talcott, as office-boy and scale tender, and in the latter capacity he weighed the first load of rubble stone sold by weight in Chicago, and established the weight per cord, which has since been adopted as a standard by the entire stone trade of the Northwest. The connection of Mr. Kimbell with this firm and its successors, the Singer & Talcott Stone Company, continued during a period of thirty-three years, unbroken except by an interval during which Mr. Kimbell was in the United States' army, in the war of the Rebellion. He enlisted in Battery A, Chicago Light Artillery, April 19, 1861, and was in the first body of troops to leave for the front during the war. He took part in all the movements and engagements of the battery up to the battle of Shiloh, where, in April, 1862, he was severely wounded in the left leg by a ball from a minie rifle. He rejoined his battery the following September, at Memphis, Tenn., taking two younger brothers and nine other recruits with him, although he could not at the time walk without

the aid of a cane. Up to the time of being wounded he had never missed a day's duty or had a moment's sickness. The rigors of marching and camp life proved too much for him in his enfeebled condition, and he was given a discharge for disability in November following. In October, 1889, the Singer & Talcott Stone Company, with which Mr. Kimbell had been so long associated as superintendent of cut stone and treasurer, sold its business to the Western Stone Company, a new concern formed by buying out six of the principal stone firms of the city, with quarries at Lemont and Lockport, Ill. He was chosen president of the new organization, one of the largest corporations of the West, remaining in this position until January, 1891, when his health forced him to retire temporarily from active business, though he remains in the directory of the company, and is also a stockholder and director in the Purington-Kimbell Brick Company, and the Chicago Hydraulic Press Brick Company, of which his brother, S. S. Kimbell, is manager, and is president of the Quarry Owners' association, an organization comprising every quarrying firm doing business in Chicago. He has twice had personal supervision of the construction of a large portion of the stone sidewalks of the main part of the city, before and since the big fire, and has been closely identified with the supplying of stone material for many of the principal buildings and public improvements of the city. During the winters of 1867 to 1870 he had, with others, a large contract with the city for a portion of the deep-cut work for the canal at Lemont, for draining the Chicago river. He was one of the original members of the Builders & Traders' exchange, and served two terms as a member of its board of directors. In many ways, not connected with building and kindred interests, Mr. Kimbell has demonstrated his right to rank as he does among Chicago's most enterprising and helpful citizens. There have been few movements started during his active career, having in view the development of the city or the improvement of any of its important interests, that have not received his encouragement, and many have had his outspoken advocacy. His standing, socially and commercially, is unquestioned, and he has since boyhood numbered among his friends those who have been foremost in making Chicago what it is to-day, the greatest example not only of municipal and material development, but of American push, energy and enterprise. He has been connected with the Second Universalist church from boyhood. He was one of the building committee in erecting the present church at the corner of Warren avenue and Robey street, and has been chairman of its board of trustees for three years. He is a strong and consistent Republican in politics. He is a member of the U. S. Grant post, G. A. R., is vice president of the Chicago Union Veteran club, and is a life member of Cleveland lodge, A. F. & A. M. He was married in Chicago, October 10, 1863, to Miss Almira H. Bartholomew, and has three children—two sons and a daughter—grown to maturity.

John Worthy, stonedealer and contractor at 714 Tacoma building, one of the representative men of Chicago, spent his early years on a farm in Will county, Ill., and received his education in its public schools, including a high-school course. He enlisted in the One Hundred and Thirty-eighth Illinois infantry, and served with it until the regiment was mustered out. Full of ability and enterprise, he was not one to keep long out of the activities of busi-

ness life, and after a service of two years as superintendent of one of the Wilmington coal mines, he came to Chicago in 1867, and commenced his career as a stonedealer, introducing the celebrated Ohio sandstone in Chicago and the West, and later on including the sale of Amherst and Berea buildingstone and grindstones, becoming also manager of the St. Genevieve quarries, on the Mississippi river, below St. Louis, from which was furnished the stone for the Iowa State house and other costly buildings in the West. He also became a member of the firm of Earnshaw, Worthy & Co., operating one of the finest of the Lemont limestone quarries, and in 1878 he perfected arrangements by which he became the general western agent for the sale of all the sandstones used in Chicago, as well as other kinds of stone used there and in the West, which included, in addition to those already named, the Connecticut brown stone and the Marquette and other Lake Superior brown stones. He also became a cut-stone contractor, being associated as such with E. R. Brainerd, under the firm name of E. R. Brainerd & Co., which firm has erected a large number of government, state, county and other prominent buildings throughout the West. There is no member of the building fraternity of the country better known or who stands higher in its councils than Mr. Worthy, for his success has been attained by close attention to business, by strict integrity, and by the prompt and faithful manner with which he has carried out all agreements and contracts entered into by him. As a citizen of Chicago, the enterprise and ability which Mr. Worthy has bestowed upon his private business has been duplicated in his connection with public interests, and he has always been ready to join hands with those who have the welfare of the city at heart, but, although urged to do so, he has invariably refused to accept any remunerative public office. He is at present one of the five Lincoln park commissioners, one of the three directors of the House of Correction, a director of the Commercial Loan & Trust Company bank, and one of the trustees of Grace Methodist Episcopal church, of which his wife is a member. He was married December 31, 1873, to Miss Martha E. Johnson, of Elizabeth, N. J., by whom he has two sons: Sidney W. and Willis B.

Nearly forty years of unbroken prosperity sums in brief the history of that formerly notable and flourishing establishment, the Singer & Talcott Stone Company, contractors and wholesale dealers in rough, sawed and machine-dressed limestone of all kinds, whose capacious and well-ordered yards and offices were located at No. 334 South Franklin street, with branch yard at 331 Hawthorne avenue, and immense quarries at Lemont, Ill., and which fully sustained its hold on public favor and confidence, owing to the general excellence and reliability of its products, and the upright and honorable business methods that characterized all its dealings and transactions; while the trade of the company was fully commensurate with the vast capacity and resources of the concern, which was in all respects one of the leading, largest and best equipped enterprises of the kind in Chicago, as well as one of the oldest and best known in the entire Northwest, shipping stone throughout the whole of the American continent. This widely known and flourishing enterprise was started in 1852 by the firm of Singer & Talcott, at the corner of Market and Quiney streets, who conducted the same up to 1871, when the Singer & Talcott Stone Company, of which H. M. Singer was president; E.

T. Singer, vice president; C. B. Kimbell, treasurer, and C. G. Singer, secretary, was organized and duly incorporated under the laws of the State, with a capital stock of \$30,000, and as such the business, which was moved to the commodious quarters later occupied, was continued with uninterrupted and most gratifying success until the concern was recently sold to the Western Stone Company, as elsewhere stated. The quarries at Lemont, which covered thirty odd acres of ground, possessed excellent transportation facilities, being located on the Chicago & Alton railroad and the Illinois and Michigan canal, and were supplied with ample steam power and completely equipped in every respect with the most improved appliances and general appurtenances, including three planers, three gang saws, one header, one rubbing bed, two overhead travelers, etc., while employment was afforded to from two hundred to three hundred workmen. The main yard in the city, which was 222x370 feet in area, with a dock frontage of two hundred and fifty feet, was also furnished with complete steam hoisting apparatus, five planers, rubbing and finishing devices and kindred appliances, and a large stock was constantly carried, comprising rough, sawed and dressed limestone of every description, curbing, coping, paving blocks, etc., sidewalk stones having been a specialty, and the trade of the company, which was exceedingly heavy, extended to all parts of the United States, New Mexico, Canada and the British Provinces, six barges, two steam barges, and one steam tug being in regular service.

The Illinois Stone Company is one of the oldest stone companies now doing business under the same name in the state. It was organized February 24, 1855, by S. F. Gale, H. G. Loomis, W. S. Gurnee, A. S. Sherman, J. W. McGennis and O. Sherman, and chartered for thirty years with a capital stock of \$250,000. The first officers were S. F. Gale, president and H. G. Loomis, treasurer. Mr. Gale continued as president of the company until 1863, when he resigned, and Mr. H. G. Loomis became the president, which office he has filled up to the present time. In 1860 the capital stock of the company was reduced to \$100,000, at which figure it has since remained. In 1885, the organized charter having expired, a new organization was formed with H. G. Loomis, president; L. Loomis, vice president, and Charles B. McGinness, secretary. The present officers are H. G. Loomis, president; A. Jacobson, vice president, and J. A. Hogan, secretary, treasurer and general manager. The operations of this company have been large in volume, and their quarries located at Lemont, Ill., comprising over three hundred acres, are practically unlimited, only about fifty acres having been worked up to the present date. Their product is a superior quality of stratified limestone, unsurpassed for general building purposes, flagging etc. The company employ from one hundred and fifty to two hundred hands, and the amount quarried each year ranges from two hundred and fifty thousand to five hundred thousand cubic feet annually, besides a large amount of rubble stone. The office and yards of the company were located at Fifth avenue and Taylor street until 1886, when they sold out their land to the Wisconsin Central railroad, who utilized it in their terminal depot yards, etc. Since 1886 the company has commodious facilities at Lumber and Twenty-second streets, with branch yard at Elston avenue and Division street. Mr. Gale, the first president of the company, is one of the

pioneers of Chicago and still a resident of the city. Mr. Loomis, the president, was also one of the pioneers of the city, and is now living in Vermont. He is also largely interested in other business connections in St. Louis and elsewhere. Mr. Gurnee, one of the organizers of the company and subsequently mayor of Chicago, is now living in New York, but still retains an interest in the company. J. W. McGenniss, another founder, died in 1885, being connected with the company until his death. L. Loomis, a former vice president, is now a resident of New York. C. B. McGenness, formerly secretary, died in February, 1891. James A. Hogan is the efficient secretary, treasurer and general manager of the Illinois Stone Company. He is a native of Cook county, Ill., his birth occurring December 2, 1852. His father, Martin Hogan, was born in Ireland in 1820, and as early as 1847 came to Cook county, dying in Chicago in 1877, after having helped to build the Illinois and Michigan canal, on which he was afterward employed as captain, being at the time of his death, in 1877, the oldest captain on the canal. The mother of James A. Hogan was Margaret Hogan, who died in Chicago in 1885, at the age of sixty-two years. James A. received a common school education, and subsequently took a course in Bryant & Stratton's business college. Since 1870 he has been in the employ of the Illinois Stone Company, which he has served in various capacities for the past twenty years, his services proving almost indispensable to the firm, which had placed in him implicit confidence. He has, in the name of the company, been a member of the Builders & Traders' exchange, in which order he was elected a director January 19, 1891. He is a shrewd, conservative business man, conscientious to his employers in the discharge of every duty, honest and upright in every transaction, and one who is thoroughly liked and respected by all. He was married in 1872 to Miss Frances Hendry, who was born in Buffalo, N. Y., their marriage resulting in the birth of five children. Mr. Hogan is a member of the A. O. U. W., the I. O. F. and the Royal Arcanum. He is a republican in politics and has twice been a member of the committee from the Sixth ward.

The old Deakman Brothers' stoneyard was established in 1853 by W. C. Deakman, one of Chicago's deservedly honored pioneers, an energetic business man, and a skilled mechanic. The later members of the firm, F. & G. H. Deakman, were sons of the founder of the business. They were Chicagoans born and bred, thoroughly educated in all the details of their business under the vigilant eye and skillful instruction of their capable father, who for more than a quarter of a century had successfully conducted the concern; and in surrendering his mantle of authority, he well knew it was falling upon the shoulders of intelligent and competent men who would have but one aim in life—to uphold the honor and integrity of the business he had established by a long and praiseworthy career. The yard was an extensive one, occupying twenty thousand square feet. They gave employment to thirty odd hands who were proficient in their trade, and as they turned out nothing but hand-work, giving it their own supervision, their orders were always filled to the entire satisfaction of patrons. Being also contractors they were able to point with pride to many structures as massive monuments of their skill, and by the ample capital at their command and the full supply of stock constantly on hand, they were at all times able to meet the demands of their trade, which

came to them from all parts of the West and Northwest. This concern was at the height of its popularity about ten years ago.

The importance of cut and machine-sawed lime and sandstone work can hardly be overrated. In this connection the concern of Henry Kerber & Son, whose office and yard is located at No. 330 Fifth avenue, may be appropriately mentioned. This enterprise was originally started in 1860, in a small way, by the present senior proprietor, who has since largely increased his business by indefatigable energy and a business policy of spotless integrity. To-day, a careful investigation of the many firms similarly engaged reveals the fact that none are regarded as more thoroughly reliable, and none more prompt in the fulfillment of all contracts awarded to them. The premises occupied at the address above indicated, cover a large area. They are thoroughly equipped in all departments with such machinery as is required, consisting, in part, of steam saws, derricks, etc. A superior steam engine is used for propelling the machinery, and a large force of men is employed. As contractors for cut and machine-sawed stone of all kinds, the operations of this house are not confined to this city, but extend more or less throughout the neighboring states, and as far south as New Mexico, and aggregated, yearly, fully \$100,000 as long since as 1883. Mr. Kerber is a native of Germany, but has resided in this city for nearly forty years. From 1875 to 1878 he served his constituents as alderman, with satisfaction and fidelity to the city's interests. He is reliable, energetic and trustworthy, and has established an enviable business reputation, entitling him to a high position among the business men of Chicago.

Henry Furst is a member of the firm of Henry Furst & Co., cut stone contractors, 441 to 455 Fifth avenue, and of the firm of Furst, Jacobs Co., which quarries stone in Houghton county and Marquette, Mich. In 1861 the firm of Furst & Kerber was established in this city at 342 Fifth avenue, and transacted business until 1865, when Mr. Furst located on the ground he now occupies, and Mr. Kerber continued at 345 Fifth avenue. From 1865 to 1884 the firm was known as Henry Furst, but since the latter date has been known as Henry Furst & Co., at which time Henry Furst, Jr., became a partner in the concern. Mr. Furst has done a large business for many years in Chicago. He has helped to build up the city twice, once before the fire and once after, and his long experience well qualifies him for conscientious work. All kinds of structures have been furnished with his materials—offices, stores, flats, public buildings, residences, etc. His work may be seen upon the residences of C. H. McCormick, S. M. Nikerson, C. T. Yerkes, John B. Sherman, John Cudahy and W. E. Hale, besides many other of the best buildings of the choicest portions of the city. He was born in Germany, July 25, 1832, a son of Jacob and Catherine Furst, both of whom died when he was quite young. In 1853 he came to the United States and first located in Cleveland, but in 1854 came to Chicago and remained until 1855, when he once more took up his abode in Cleveland, returning to Chicago the same year. In this city he has since resided and labored. He learned the stonemason's trade in Germany, and worked as a journeyman until he began independently for himself in 1861. In 1856 he married, in this city, Miss Julia Gernhardt. They have one son, Henry, Jr., born in 1863. Mr.

Furst has been a member of the Builders & Traders' exchange since its organization. He is one of the oldest cut-stone contractors of the city. His father was also a stonecutter by trade. Mr. Furst is a Mason, a member of Herder lodge No. 669, and of Wiley M. Eagan chapter No. 126, R. A. M.

Traugott C. Diener is a well-known cut-stone contractor of this city, with office at 346 to 354 West Twenty-first street, which has been his place of business since 1887. He was born in Breitanbach, province of Saxony, Prussia, April 19, 1847, being one of five children (four sons and one daughter) born to John G. and Eleonore Diener, the former of whom was a stonecutter by occupation. He immigrated to the United States in 1854, to make a home for his family, but sickness, stagnation of business and other reverses delayed the following of his family until 1857. The educational advantages of Traugott C. Diener were very limited while in his native land, owing to sickness, but upon reaching this country he began attending a German school, and after three years devoted to study he began working at various occupations, but with rather poor success. He soon came to recognize the fact that a knowledge of the English language was necessary to a successful career in this country, and with this end in view he entered the Foster public school, at the age of fourteen years, in which institution he commenced reading in the first reader. Being of quick perception and possessing a retentive memory, he made such rapid progress in his studies that he graduated two years later, receiving the Foster medal and also the gold medal as a reward for his perseverance and ability to graduate in this short time. He next attended high school for nearly two years, then entered Bryant & Stratton's business college, from which he graduated in November, 1865, but during the following winter he experienced much difficulty in obtaining employment, with nothing but his diploma and school recommendation to further his cause. However, in the spring of 1866, he secured a position as teacher, and in the fall of that year he became bookkeeper for the cut-stone firm of Deakman & Sproehle. By close attention outside of his clerical work, he soon mastered every detail of the cut-stone business, and the firm grew to rely upon his ability to such an extent that he was entrusted with some of the finest buildings of the city which were erected prior to the fire, among which may be mentioned the magnificent Drake block, the Page & Sturges block, the handsome residence of Marshall Field and many others. Immediately succeeding the great fire of 1871, Mr. Diener started in business with George Robinson, under the firm name of Diener & Robinson, and for three years after becoming thus associated they were located at the corner of Franklin and Harrison streets, after which they moved their place of business to Harrison street and Fifth avenue. Since the death of Mr. Robinson in 1884 the business has been successfully conducted by T. C. Diener, who now owns his plant. He has erected some of the very finest business blocks and residences of the city. His work is always strictly first-class, and he can always be relied upon to fill his contracts within the appointed time. He put down the first stone sidewalk on State street after the great fire, and owns a third share in the extensive stone quarry at Bedford, known as the Acme Bedford Stone Company. He has been the secretary of the Cut Stone Contractors' association since its

organization, is a member of the board of directors of the Builders & Traders' exchange, and is secretary and treasurer of the Acme Bedford Stone Company. On the 15th of January, 1871, he was united in marriage to Miss Lillie Rosenberg, a very intelligent, amiable and handsome lady who, by her cheerful disposition, has been a great comfort to her family and has gained a wide circle of intimate friends. Her fine vocal qualities have been a source of great pleasure to her family, and she has frequently used her gift to aid church concerts, her efforts being always heartily applauded. Her union with Mr. Diener has resulted in the birth of the following children: Charles T. (dead), William J., Lillie (deceased), Rosa, Walter and Arthur. William attended high school, and is now in his father's employ, and Rosa is a graduate from the high school. Mr. Diener and his family were members of the Evangelical Lutheran Zion church at the corner of Nineteenth and Johnson streets, of which Mr. Diener was one of the trustees for sixteen years. They now belong to the Evangelical Lutheran Immanuel church on Ashland boulevard near Twelfth street. Members of his family were in the terrible railroad accident of the 21st of September, 1890, when Lillie, at the age of sixteen, lost her life.

John Rawle, the well known cut-stone contractor, office 578 to 596 South Morgan street, whose extensive yards have a frontage of three hundred and seventy-six feet on South Morgan street and two hundred and fifteen feet on Henry street, was born in Somersetshire, England, in May, 1843. At the age of four and one-half years he removed with his parents to South Wales, where he grew to manhood, received his education, and served an apprenticeship at the trade of stonecutting and carving. On becoming a journeyman, he went to London, where, in addition to working at his trade, he studied architectural, mechanical and free-hand drawing, in all of which he became an expert, as was amply proven by his taking first prize in each of these studies, in competition with many others who have since attained eminence as architects and mechanical engineers. Coming to this city in the spring of 1868, he worked at his trade here and at St. Louis until the summer of 1872, when in a small way he engaged in business for himself at the corner of Clinton and Sebor streets, and later at the corner of Ellsworth and Mather streets on the west side, until 1881, when he removed to Fifth avenue near Polk street, where he remained until May, 1886, when he located at his present site. Mr. Rawle, like many others, sustained heavy losses, nearly losing his all in the great panic of 1873, and it was only by his indomitable energy, perseverance, tireless industry and the most rigid economy in the management of his business that he was able to weather the storm. By the judicious exercise of the excellent judgment he seems to have inherited from his parents, he has climbed the ladder of prosperity and popularity, until at the present time he is one of the wealthiest and best known contractors in his line in the western country. He has always confined himself strictly to the stone business, either as contractor or quarryman, and has never in a single instance been induced to engage in any outside speculation, no difference how alluring the prospects were for profitable investments. His strict adherence to this policy has enabled him to give his whole time and attention to acquiring a thorough and complete knowledge of all the different branches of the business, and



John Rawls

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there is probably not another person in this city as thoroughly posted in regard to it as he is. Several years ago he purchased the Carbondale brownstone quarry, and later the Southern Illinois brownstone quarry, both of which are located at Bosky Dell, Jackson county, Ill. In 1889 he secured the Baalbec quarries (now known as the Acme Bedford) near Bedford, Lawrence county, Ind. These quarries are among the best in the country as to extent, quality of material, cheapness with which it can be quarried, and the transportation facilities connecting them with the markets.

In the conduct of these quarries, together with the cut-stone business, where so much money is invested and such heavy expenses are incurred, great tact, judgment and experience are required in their management to make them profitable, consequently Mr. Rawle retains supreme control in all, but has under him able and efficient managers in the different responsible positions, who see that his ideas are properly carried out. Mr. Rawle is a member of the Builders & Traders' exchange, the Quarrymen's association, and the Cut-Stone Contractors' association. He has been second vice president of the former and vice president and president successively of the others. Mr. Rawle is very progressive in his ideas, and is always on the alert for new and improved devices or methods for working or handling material or in conducting the business. He is far and favorably known from having furnished per contract the cut-stone work for some of the largest and handsomest buildings in the city, and a great number in the surrounding towns and country, in all of which he has stood faithfully and honorably to the true intent and meaning of the plans and specifications from which the work was executed. Believing there was a large field for improvement in the machinery and appliances used in connection with the business, he has devoted a great amount of time and study, besides spending large sums of money in the development of theories, which to others might seem chimerical, but to him were indisputable realities, and which have at the present writing culminated in the invention and erection of a small model of a stone-cutting machine and the invention of a granite cutter and a stone channeling machine. This model, one-fourth the size of a large machine, is now on exhibition at his yard on South Morgan street, and has been viewed with wonder and admiration by many machinists, architects, contractors and builders. The most incredulous have been convinced, before seeing the machine at work five minutes, that it will do all and more than its inventor claims for it, although these claims may appear to the uninitiated to be very extravagant. They are—that it will do the work of twenty stonecutters, do it better, and effect a saving in material equal to the expense of running it, and estimating at \$4.50 per day (the present rate of wages), it would effect a saving of \$90 per day. These inventions are the crowning labors of this sober, energetic, persevering and industrious contractor. Mr. Rawle's success can in part be attributed to his strictly temperate habits, as he never indulges in intoxicants of any kind, and employs no one to fill a responsible position who does. In 1884 he wedded Miss Augusta Elsie Zick, who has borne him one son and three daughters. He was reared in the religious faith of the Episcopalians, is a republican in politics, and an active member of the Masonic fraternity. Scrupulously honest, his word is as good as his bond, and both are good as gold.

Abram C. Backus, manager for John Rawle, cut-stone contractor, is located at 578 to 598 South Morgan street, and is one of the reputable men connected with the building interests in Chicago. In a work of this character embracing, as it does, all departments of the building art, it is necessary to go beyond the business of the architect, or contractor or builder to numerous other collateral interests of sufficient importance to merit extended notice and treatment. It therefore seems proper to give due prominence to such men as the genial, competent, energetic and efficient manager for John Rawle—Abram C. Backus, who was born in the province of Ontario, Canada, May 28, 1845. His parents, Edward and Violetta Backus, were also natives of Canada, and are now living in Bowling Green, Ky. The career of Abram C. Backus has been a rather checkered one, for since coming to the United States, in 1862, he has been engaged in almost as many lines of business as the chameleon has colors, but always with the object in view in each change to advance a step upward. His first position, after reaching the United States, was that of the modest railway brakeman; next he carried mail for Uncle Sam over a star route for nearly a year, but feeling the position to be a lowly one without prospect of promotion, he abandoned it and engaged in buying poultry in different parts of Indiana and Ohio, first for Henry and Frank Carter, of Winchester, Ind., then for his father, and finally for Jont Keller, Jr., of La Gro, Ind. He was engaged in these varied employments until the spring of 1869, when, meeting a horse buyer from Kentucky, he determined to visit the land of blue grass and thoroughbred horses with the old gentleman, who was only too willing to accept of his valuable assistance in taking the stock he had purchased down to his plantation. After a tedious ride of twelve or fourteen days, the plantation was reached, the horses turned loose, and Mr. Backus left to shift for himself, which he did by paying a visit to Bowling Green, where the opportunity he had long desired first presented itself: the chance to learn stonecutting, and here in the employ of and under the instruction of the kind-hearted John L. Stout (still engaged in the same business in Bowling Green) he learned the trade which has made him one of the foremost men in connection with the building business of the great city by the lake, in which, at present, the interest of all Christendom is centered, owing to its selection as the site of the Columbian exposition. Arriving here in February, 1872, when the city was in ruins from the great conflagration of the 9th and 10th of the previous October, he worked at stonecutting for his brother for nearly a year, when he was made foreman, which position he held with E. Backus and later with Charles Manske, who succeeded to the business, for nearly nine years. In September, 1879, he went to Para, Brazil, where he spent six months in charge of the extensive marble works of Martin & Backus, during their absence in this country. April 1, 1882, he accepted the superintendency of John Rawle's cut-stone yard, which was then, as now, one of the largest and best equipped establishments of the kind in the United States. Filling this position for two years with credit to himself and profit to his employer, he was made manager and given a working interest in the business. During the long period of his engagement with Mr. Rawle no misunderstanding has ever arisen nor a single unkind word passed between them, which speaks more for his honesty, sobriety, industry and ability than whole pages of

enologies could. In February, 1876, he wedded Purliette, the widow of D. S. Watkins and daughter of E. F. Keller, one of the oldest and best known hotelkeepers in the Wabash valley. Mrs. Backus has one child (a daughter) living by her first husband, and since marrying Mr. Backus has become the happy mother of two intelligent and promising sons, the elder of which, Charles M., is thirteen years of age and the younger, Henry S., eleven years old. Mr. Backus has an extensive acquaintance among the architects, contractors, builders and material dealers, fully equal to that of any member on the floor of the Builders & Traders' exchange, and wherever known he is honored and respected for his honorable methods of conducting business and steadfast adherence to what he considers right.

John Arnold is well known in Chicago building circles. His grandfather, George Arnold, was a resident builder in the town of Rochford, county of Essex, England, as far back as 1775. He had three sons and three daughters, of whom John Arnold, father of our subject, was the second born, his birth having occurred December 1, 1807. In 1837 he married Miss Hester Jones, who died in 1870. At the age of twenty-one he went to London and engaged in the building business, in which he continued until a few years prior to his death, which occurred August 13, 1883. He left five sons and five daughters. All of the sons became connected with the building business. All left England while yet young, and were scattered in Australia, Canada and the United States. John Arnold, the eldest of these brothers, was born in Loughton, Essex (near London), October 15, 1846. His mother, who was Hester, the daughter of Thomas Evans Jones, formerly of Wales, was born at Beechwood Valley, Hertfordshire, England, in 1816. When in his thirteenth year he began work in the Thames Iron Works shipbuilding yards, London, where he obtained a general knowledge of shipbuilding and marine architecture, and an insight into the manufacture of iron and wood work. On the 13th of January, 1862, in the ancient town of Romford, Essex, he commenced work at St. Andrews church as an apprentice to the stone business; and as his employer was engaged in erecting churches, bridges and gentlemen's mansions in various parts of the country, he was constantly moving from place to place during the period in which he was learning his trade. After having worked in a number of towns in England and Scotland, he visited France. From there he sailed to America, landing at New York April 11, 1868, where he was offered and accepted inducements to come to Chicago and assist in the erection of a marble building at the northeast corner of State and Washington streets, later going to Bloomington, Ill., to take part in the erection of the courthouse and other fine stone buildings. From there he went to California, and was engaged on some of the finest stone work in San Francisco, returning to Chicago in April, 1872, to assist in rebuilding the city after the great fire. Ever since then Chicago has been his home and he has identified himself thoroughly with its public interests. During all these years, however, most of his work has been in other cities, where, in the order of events, he has been called to take part in the building of many fine structures. At the present time he is engaged in the erection of the stone work of the Chicago Athletic Association building, Michigan avenue near Madison street, and is interested in various other building work throughout the city. In summing up his experience as a builder and worker

in stone, it may be said that he has been privileged to take an active part in the erection of various kinds of structures in England, Scotland, France, Ireland and America, his operations in this country having extended from New York to San Francisco and from New Orleans to Minneapolis and St. Paul, including St. Louis, Cleveland, Indianapolis, Toronto and other cities. He has made a number of trips across the Atlantic and has done work on some of the finest buildings in the world, including King's college, Cambridge, Westminster abbey, London, and the most elegant structures in New York and Chicago. He was married at the old parish church of Stepney, London, England, in 1866, to Miss Eliza Page, of Sible Hed-ingham, county of Essex. They have children named as follows: Esther E. Bultman, Annie Eliza, Albert Edward, Victor Page, and Grace Beatrice. He settled his family where he now lives at the corner of Diversey and Sheridan avenues. At this place is established his branch yard for stonecutting and building work, and here may be seen a fine collection of curiosities consisting of many kinds of stone gathered from ancient buildings in various parts of the old world, some of which date back to the time of William the Conqueror. Mr. Arnold is a member of the Builders & Traders' exchange, of the Stone Contractors' association and of the Brick Masons' union. His public spirit is proven by the fact that he founded and erected at his own expense the first church building in Avondale, known as the Meeting House chapel, to which strangers are always welcome.

M. B. Madden is the efficient vice president and general business manager for the Joliet Stone Company in the city of Chicago, the main office being room 15, 159 La Salle street. The plant was established at Joliet, Ill., in 1870, and connected with their establishment at that place is a canal and railroad service for shipping purposes. Of this company George H. Munroe, who is a large property holder and a popular citizen of Joliet, is president. G. M. Campbell, also a resident of that place, is the general manager of the plant. Mr. Madden was born in Chicago in 1855, and when only twelve years of age became an employe of Edwin Walker, a successful stone dealer, and while with him was initiated into the mysteries of the calling and obtained a thorough and practical knowledge of business life, laying a substantial foundation for a successful career in later years. In 1880 he connected himself with the Enterprise Stone Company in the capacity of superintendent, but later was made financial manager of the Chicago Building Stone Company, and so successful was he that in 1886 he was enabled to purchase an interest in the Joliet Stone Company, with which he has since been identified. Being a young man of sound judgment and practical ability, his services to the company of which he is a member have been inestimable, and to his persistent and untiring efforts is largely due the fact that the Joliet Stone Company bears its present enviable reputation. Mr. Madden possesses superior natural endowments, and these have been broadened and strengthened by contact with the business affairs of life from early boyhood, and he is now justly considered a shrewd and intelligent man of business and a far-sighted and able financier. He possesses executive ability of a high order and a large amount of practical sagacity, and to show their appreciation of these qualities he has been elected by his numerous friends of the Fourth ward to represent them in the city council. He is an active member of

the Builders & Traders' exchange, of which, in 1888, he held the office of vice president, and in 1889-90 was one of the directors. In 1890-91 he was a delegate to the national convention of builders held at St. Paul, Minn., and New York city. He has also been, since 1887, president of the Quarry Owners' association, and is a member of a committee of the World's Fair. He is a supporter of secret organizations and is a member of the Foresters, the United Workmen and the National Union, and is a member also of the Douglas and Sheridan clubs. Up to 1871 the stone business of Chicago was in the hands of five companies: Edwin Walker, the Singer & Talcott Stone Company, Excelsior Stone Company, the Illinois Stone Company and Bayer & Comels. About the only stone used in Chicago at that time for building purposes was limestone, but now forty different kinds are available, and the annual business in this line amounts to \$15,000,000.

Martin Delaney is the efficient general manager of the Calumet Valley Stone Company. He was born May 22, 1853, in Delaware county, Penn., and is a son of Martin Delaney, a native of Ireland. He came to Cook county, Ill., when six years of age, and has since made it his home. He received a fair schooling in youth, and when thirteen years old first began in the stone business as an employe of Edwin Walker. He continued day-laboring with Mr. Walker and others, for about five years, during which time he was placed in different positions of trust, as his knowledge of the business warranted. He came to Chicago in the spring of 1872, as foreman for the Singer & Talcott Stone Company, with whom he remained from 1872 until October 1, 1889, and, upon resigning this place, was made superintendent of the north side yards. His long service with the company, as well as his previous labors in the stone quarry, has given him a thorough and practical knowledge of all the details of the stone business, and no man is better fitted or more capable of filling the responsible position he now holds than is Mr. Delaney. From October, 1889, to May 1, 1891, he was superintendent of yards Nos. 4, 5 and 6, of the Western Stone Company, on the north side, but since the last named date he has been general manager of the Calumet Valley Stone Company. In discharging the duties which devolve upon him he is faithful, efficient and painstaking, and as he has been familiar with the stone business for twenty-four years, is thoroughly competent and reliable.

That stone is one of the indispensable commodities, and an important auxiliary in all communities where building is carried on to any extent, is conceded by all, and in a great city like Chicago, where thousands of business blocks and residences are erected annually, it is an industry engaging the attention of numerous firms, and reaches in the aggregate a business of no inconsiderable magnitude. The city of Chicago has every reason to be proud of her many concerns identified with this industry, as they are, as a class, thoroughly reliable and conducted upon principles of sound business integrity. One of the leading establishments was that of the Excelsior Stone Company, the officers of which were S. W. Norton, president; and B. J. Moore, superintendent and treasurer. The extensive quarries of the firm at Lemont, Ill., covered an area of seventy-five acres. The company employed two hundred and fifteen men, one hundred and seventy-five in the quarries and forty in the city, forty teams,

canal boats, etc. In 1882 the company sold and delivered fifteen thousand cords of rubble stone, weighing thirteen thousand pounds to the cord. They also supplied an equal amount of footing and pier stone. In Chicago the main yard and office of the company were located at No. 264 Market street, with a branch yard at the corner of Division and Halsted streets. Every department of their work was conducted under the supervision of able and competent managers. This concern, with the Singer & Talcott Stone Company, the Chicago & Lemont Stone Company, the Corneau Stone Company, the Bodenschatz & Earnshaw Stone Company, and the Lockport Stone Company, has been succeeded by the Western Stone Company, of which J. L. Norton is president, B. J. Moore, vice president and general manager, and H. L. Draper secretary.

Peter J. Biegler, the senior member of the well-known firm of Biegler & Ebertshausen, which has its yards at Cherry and Division streets, is one of the leading cut-stone contractors of Chicago. A native of Germany, he possesses the sterling business qualities of his people. He was born December 2, 1852, and since about 1855 has lived in Chicago. His education in youth was somewhat limited, but has been largely supplemented since reaching manhood. At the age of twelve years he entered the office of the *Illinois Staats Zeitung* and began to learn the printer's trade, but four years later abandoned that occupation for the purpose of learning the stonemason's trade, with which he has had an unbroken connection. In 1879 he began operations for himself, and for several years was without associates; but his enterprise grew so rapidly that other partners were admitted, and finally the present firm was organized. The company employs from eighty to one hundred men constantly, and its work may be seen in all parts of the city. The members are industrious and energetic men, fully abreast of the times, and have at their command all the most improved methods of conducting their operations. Among the many notable residences in which the material of the concern has been utilized may be mentioned those of Franklin MacVeagh, J. V. Farwell and Dr. McGill; it was used also in the Art Institute, in numerous churches and other structures in Chicago, and in the Mather building in Cleveland, Ohio. Mr. Biegler is a member of the Stone Cutters' association, and of the Builders & Traders' exchange. He is an enthusiastic democrat. In commercial circles he is recognized as a careful business man, a credit to the industrial interests of this great city, and it has been largely through his push and enterprise that the concern has grown to its present great importance. His personal popularity is indicated by the fact that in 1891 he was elected alderman from the Twenty-fourth ward by six hundred and seventy votes over all competitors.

P. Kempe & Co. are general cut-stone contractors, with office at the corner of Jefferson and Mather streets. The establishment dates its inception back to 1875, since which time the company has furnished stone for many buildings, among them being a block of eight houses on Astor street near the Lake Shore drive, a fine residence for Martin Ryerson, a handsome residence on Thirty-fifth street and Wabash avenue for A. P. Turner, residence work for Marshall Field, a residence for Mr. Leshner on Wellington avenue in Lake View, fine residence for Professor Swing on the Lake Shore drive and Goethe street, two

handsome houses on Frederick and Clark streets, the beautiful residence of Simon Karger at 3661 Michigan avenue, a handsome dwelling on Michigan avenue between Fourteenth and Fifteenth streets, as well as many others in the city and suburbs. Mr. Kempe has always made a specialty of residence work, and at his large yard, where they employ a large force of men, they cut and dress the stone. Mr. Kempe was born in Denmark in 1845, and grew to maturity in his native country, receiving a good education in the country schools. At the early age of nineteen years he came to America alone and at once came to Chicago, where he engaged as an apprentice at the stonecutter's trade, continuing four years. He followed his trade as a journeyman until 1875, then became a member of the present firm, and for some time has been a member of the Builders and Traders' exchange. He is in every sense of the word a self-made man, and is thoroughly competent and reliable as a business man. His father was a carpenter and builder of Denmark. In 1873 he was married to Miss Wilhelmina Reese, a native of Denmark, who came to America when a young lady, and by her is the father of five sons and two daughters. The family are members of the German Apostolic church, and of this church Mr. Kempe is a trustee.

Hugh Young, president of the Young & Farrel Diamond Stone Sawing Co. Stone work has always held a large place in construction and in ornamental and commemorative art. It is the fact, however, that this craft, though so ancient, and though it had furnished by its genius and industry the most extended and enduring records of civilization, was, nevertheless, slowest of all in feeling the great modern impulse toward economy and effectiveness. The new spirit has, however, come to it also, and the subject of the following sketch has the honor of being generally recognized as one of the leading factors in the change: Hugh Young was born in Edinburgh, Scotland, January 2, 1831, being the eldest son and third child of James and Elizabeth (Learmonth) Young. A year later the family moved to Kilmarnock, the birthplace of the father, where, after receiving a good common-school education and serving three years as clerk in a store, Hugh became apprentice to his father, who was in the stone business. Shortly after finishing his apprenticeship he concluded to come to the United States, reached New York on July 11, 1851, and found work at his trade immediately. He began business in that city as a cut-stone contractor in the fall of 1855, and continued in it with increasing success till 1862. He then settled up his affairs, turned the business over to his brother, James L., who had followed him from Scotland, and enlisted as a private in the Seventy-ninth New York volunteers (Highlanders). He reported to the regiment in the field three days before the battle of South Mountain, which was followed immediately after by the battle of Antietam. He served in that regiment till the end of the war and rose to the rank of captain. Shortly after Lee's surrender, he resigned his commission and reentered his former business as partner. The firm shared in the successes of the prosperous years after the war, but the widespread disasters that followed caused it to give up business. The two brothers had, however, made persistent and costly experiments, in sawing stone by the use of diamonds, taking out a number of patents for improvements in that direction. James L. had retired from the firm in 1873. Hugh,

the subject of this sketch, devoted himself exclusively from 1876 to 1882 to the developing of these inventions, and made a number of other valuable patented improvements, but it was only toward the end of that time and after years of effort and hardship that any pecuniary benefit came. At length the tide turned and brought him prosperity.

In February, 1882, he with Franklin Farrel, and Alton Farrel, of Ansonia, Conn., as associates, organized in Chicago, the Young & Farrel Diamond Stone Sawing Company with a capital of \$100,000, which was increased in 1883 to \$300,000. Franklin Farrel was president and Hugh Young, secretary and treasurer. Alton Farrel died in 1885, and on this account and because of the illness of Franklin Farrel, Mr. Young, in 1886, purchased the entire Farrel stock in the company under circumstances which increased the very strong friendship and mutual appreciation that had been in existence for many years, and which still continues. At the present time, 1891, the officers of the Young & Farrel Diamond Stone Sawing Company are Hugh Young, president; Ferdinand V. Gindele, treasurer; Henry Struble, secretary, and Robert C. Harper, general manager; all of whom are stockholders and have contributed most notably to its success. The directors are the above-named Messrs. Young, Gindele and Harper. The company has a large and growing business, and has proved very successful. It carries on a general cut-stone and planed-sidewalk business, and owns a large and very valuable property and plant, lying on the west side of the south branch of the Chicago river and south side of West Polk street. It also owns and operates a stone quarry and extensive machinery at Joliet, Ill., and since its organization, has carried on the manufacture and sale of machinery used in the stone trade, such as diamond saws, planers, travelers, cranes, etc. That department has its headquarters in New York, and is more especially under the charge of Mr. Young. In 1873 Mr. Young married Miss Annie C. Thurston, the only daughter of Richard and Ann (Bowers) Thurston, of Bangor, Me., who were then both deceased. They live on North Clark street, Chicago, fronting on one of the most charming prospects in Lincoln park. They attend Professor Swing's church. Mr. Young is a member of the Union League club.

Robert C. Harper is the able manager of the Young & Farrel Diamond Stone Sawing Company. He was born in Kirkeconnel, Dumfriesshire, Scotland, October 12, 1844, and is the son of Charles and Jane (Ingram) Harper, both of whom were also natives of Scotland, where they lived and died. Robert C. Harper was educated in his native land, and at the age of fifteen years began learning the stonecutters and mason's trade. Thus he continued until the age of twenty years, when he went to London, England, and worked at his trade for two years, and then removed to Rochdale, and became foreman for the firm of Ellis & Hinchliff, of Manchester. Later, he spent a short time working in Yorkshire, England. In May, 1868, he came across the ocean, and landed at New York, and in June of the same year came West. He located in Chicago, and worked as a journeyman stonecutter until after the great fire of 1871. He superintended the straightening of the walls of the Palmer house, and then took charge of the stoneyards of Price & Grant for eighteen months. In 1873 he engaged in cut-stone contracting for himself, but after a time went to Lemont, and took charge of the



W. H. F. 1860

R. C. Harper

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stonecutting works of the Cook county courthouse, continuing thus for five years and four months. Since the organization of the Young & Farrel Company, he has been in its employ, beginning as superintendent. He is essentially a practical business man, and well equipped for his difficult position. He is a member of Garden City lodge No. 141, A. F. & A. M., and of Medina temple of York chapter No. 148. In other words, he is a thirty-second degree Mason. He is an independent republican, and was vice president of the Quarry Owners' association. He is well known to the building fraternity of the city.

Hugh Shirlaw was born at Tarbolton, Ayrshire, Scotland, March 17, 1848, and in youth received but a limited education at the parish schools of his native village. At the age of ten years he began to learn hand-loom silk weaving, and during this period attended Band of Hope classes and singing classes, and by the time he was seventeen was a leading singer in the local churches. About the year 1867 he went to Glasgow to learn the mason's trade with John Milligan, contractor, and while thus engaged was under the direction of Hugh Taylor, his brother-in-law, and Mr. Milligan's foreman and expert tradesman. Mr. Shirlaw, not being indentured, soon acquired the capabilities of a journeyman mason and stonecutter, but being ambitious to excel in his chosen occupation he attended for two years the local school of art, and while thus engaged became so enamored of the benefits to be derived from education that he attended for three years the Young Men's Christian Association grammar and elocution classes, improvement class, etc. He emigrated to America in the spring of 1871, and worked in Chicago with Patriek Fanning, who had the contract for half of the Grand Pacific hotel, Reed & Dawson being the contractors for the other half. Succeeding this he worked with John Price, who that year constructed the Honore block and other buildings. He was in Chicago when the great fire of 1871 started, and saw the first blaze which soon destroyed the boarding-house where he stopped, on West Adams street near Canal. Later he found his trunk, clothing and books in different parts of the west side. He took other quarters, but was in turn burned out there also, and for several days immediately succeeding the fire lived on benevolent milk and crackers, but thinking that Chicago would remain in dust and ashes for six months or more, during which period he would be out of employment, he concluded to return to Scotland, which he accordingly did. He entered into partnership as a builder with Hugh Taylor, and continued thus successfully for about a year and a half, during which time he married, and in June, 1873, again started for Chicago with his young wife, and upon his arrival here began work with Reed & Tomlinson on Twenty-second street. Later he worked in other yards of the city, but after the panic of 1873 was for a time thrown out of employment and concluded to return to Scotland, and there entered actively upon the construction of speculative buildings, and made a desperate effort to enrich himself, putting up five or six tenement houses in Paisley and making about £2,000, which later was lost in the failure of the City of Glasgow bank. He again returned to the United States and followed Horace Greeley's advice to go West, journeying to Davenport, Iowa, but not finding a suitable outlook there, he immediately returned to Chicago and secured work with Henry Furst, and continued with him until the strike of his men in Sep-

tember, 1882, when he left and secured work with the Young & Farrel Diamond Sawing Stone Company, where he has since been actively employed. In his present position he has been thoughtful, and his well-directed efforts and hopeful perseverance have secured for him a most excellent name, and at the same time a very valuable experience in his special business. Among the buildings or parts of buildings of the stone cut under the direction of Mr. Shirlaw are the La Salle street front of the Home Insurance building; Robert Cable's house on Cass and Erie streets; Pardridge's residence on Twenty-eighth street and Prairie avenue; Keep's residence on Twenty-eighth street and Prairie avenue; Foreman's residence on Twenty-ninth street and Michigan avenue; Chase's residence on Thirty-fourth street and Michigan avenue; Wilson's block on Thirty-ninth street and Lake avenue; McWilliams' residence on Fortieth street and Lake avenue; Kimball's residence on Eighteenth street and Prairie avenue, besides many others equally beautiful, artistic and modern. Mr. Shirlaw takes much pride in the unsurpassed capabilities that the Young & Farrel Company possesses for handling and cutting all kinds of building stones, feeling confident that no firm in the United States have built houses of so many different kinds of stone, which are here enumerated as a worthy item of building intelligence: Of Illinois stone—Lemont limestone, Joliet limestone, Rawle's dark and light Carbondale brown sandstone, Wolf's Carbondale brownstone; of Indiana stone—buff and blue Bedford oolitic limestone of eight or ten different shades and qualities; of Ohio stone—Cleveland Amherst buff sandstone, Clough's blue Amherst, Berlin buff sandstone, Euclid sandstone, Buena Vista or Cincinnati stone; of Michigan stone—Michigan green sandstone, Marquette brown sandstone, Portage red and variegated, Marquette raindrop and variegated brownstone; of Wisconsin stone—Bayfield brownstone, Ashland brownstone, Prentice brownstone, Arcadian pink sandstone, Sinclair's rainbow-colored (or Joseph's coat) sandstone; of Pennsylvania stone—Serpentine greenstone, Hummelstown brown sandstone, Lord & Griswold's mica stone; of New York stone—Wyoming Valley and other bluestones, St. Lawrence marble from the Gouverneur quarries; Connecticut brownstones; New Brunswick brownstones; Colorado peachblow; of Wyoming stone—brown sandstone from the Vernon quarries; black-veined or clouded Georgia marble; Kasota pink limestone from Dakota; scarlet sandstone from Idaho; Vert Island or McArthur red sandstone from Canada; of Scotch stone—red sandstone from Ayrshire and Dumfriesshire. Henry Ives Cobb, the architect, has a house built of Scotch sandstone.

The house of Boldenweck & Heldmaier, contractors, and dealers in all kinds of cut and sawed stone, 185 to 201 East Congress street, attained an enviable reputation among the establishments of its kind in the city. It was established in 1883 and attained a prominence and a reputation for reliability conceded to but few firms of longer connection with the trade. The following notice of this concern was published in 1883: "The handling of cut and sawed stone in Chicago is an item of more than ordinary importance, in fact it furnishes employment to hundreds of persons and is a valuable auxiliary to the building interests of the city. To properly conduct the business requires not only a thorough knowledge of its details, but necessitates a familiarity with the several qualities of stone and the purposes to

which they are best adapted. For the successful prosecution of the trade, the firm have extensive facilities, their yards covering an area of nearly twenty thousand square feet, and a sawmill equipped with all the latest improved labor-saving machinery in this line, operated by steam power. A force of eighty men are regularly employed in the several details of the business, which is under the individual supervision of both members of the firm. A stock of about \$9,000 is carried, and the trade of the house extends not only throughout this city, but all over the northwestern states, aggregating yearly about \$30,000. Both Mr. Heldmaier and Mr. Boldenweck are natives of Germany; the former has resided here seven and a half and the latter thirty-five years."

James P. Mallette, of the firm of Eggleston, Mallette & Brownell, was born in St. Louis, Mo., in 1851. He came to Chicago in the spring of 1873, and has since been a resident of this city. His first business connection here was in the wholesale woodenware trade, and later was engaged in the manufacture of furniture on Canal street. He was operating in real estate prior to the establishment of the firm of J. P. Mallette & Co., in 1884, for the buying and handling of real estate under Mr. Mallette's management. The following spring the firm of R. E. Brownell & Co. was formed for the purpose of opening up stone quarries and doing general contract work, under the management of R. E. Brownell. In both of these concerns Mr. Charles B. Eggleston was a special partner. In 1889, as has been stated, the business was consolidated and a general partnership formed. Last year the real-estate business under Mr. Mallette's supervision amounted to upward of \$2,000,000, and the contract work under the supervision of Mr. Brownell to more than \$1,000,000. The firm has erected more than three hundred and fifty buildings, the actual work on the majority of them having been performed by their own men under their personal superintendency. Their subdivisions and public improvements have been referred to. This gentleman is a conspicuous representative of that large class of young, vigorous and practically self-made men who have done so much to place Chicago in the proud position she occupies to-day.

Lord & Griswold, 161 La Salle street, stone and marble dealers and contractors for granite work, are wholesale dealers in oolitic limestone, Kasota pink limestone, and the St. Lawrence marble. A considerable item of their business is dressed granite (both red and gray) polished columns and pilasters, platforms and steps for building purposes, and granite for foundations, abutments, copings, arches, etc., in bridges and kindred constructions. They furnish the oolitic limestone (commonly called Bedford) from the quarries of the Salem Stone & Lime Company, which are located at Salem, in the extreme southern portion of Indiana, and from the Indiana Oolitic Limestone Company, whose quarries are located at Stinesville, in the extreme northern portion of the deposit in Indiana of this most excellent building stone. The location of these quarries is an advantage which they have for their extensive shipment to Chicago and elsewhere. Some forty or fifty years ago the Salem quarries produced stone which was used locally and stands to-day without blemish. For a while this stone was neglected, but of late the volume of shipments has yearly increased, until at the present time it is found as stock stone in most of the stoneyards of the United States. The

wonderful increase of the use of this stone can not be wondered at, for the reason that it stands upon its merits, with the record that no instance can be shown of its disintegration, which can be stated for but very few of the building stones in general use. The quarries are fully equipped with saws, planers, jointers and quarry machinery, and are prepared to furnish the stone in shapes and sizes as desired by architects and engineers. The St. Lawrence marble quarries are located at Gouverneur, N. Y., on the Rome, Watertown & Ogdensburg railroad. This marble is an almost pure crystallization of the carbonate of lime. Most of the crystals are of fair size and contain hornblende and feldspar in small quantities, showing its archæan formation. The crystals are well cemented together and homogeneous, giving a sparkling look to the broken rock face, which, together with its even color, is a recommendation for appearance. Its crystalline structure renders it durable and always clean and bright in a building. Examples of construction in this marble can be seen in the residences of Mr. S. K. Martin, at the southwest corner of Michigan avenue and Twenty-sixth street; J. L. Woodard, 3416 Michigan avenue and many others. The Kasota pink limestone is furnished from the Matt Breen stone quarries, at Kasota, Minn. This stone is geologically called a ferruginous, siliceous dolomite, in other words a magnesia limestone which contains free silica (quartz) and is colored by one of the oxides of iron, which is the basis of nearly all the color of stone. It is a bright warm pink building stone, which is very popular in isolated buildings for certain styles of architecture, and can be placed in a row of fronts to relieve the sameness of color. The stone is a stratified formation, the ledges being from about one foot and eight inches to two feet and four inches thick, but some of the seams are so tight that for rock face work the slab can be sawed each side of the seam, thereby making various heights of courses without waste, as the oolitic stone is worked. Among many examples in construction of this stone are the residences of R. W. Tansill, 332 Dearborn avenue; and the block of residences built by Potter Palmer, near the lake shore drive. Their Port Deposit granite is found in numerous platforms and steps in the residence of C. W. Nichols, on the southeast corner of Twenty-ninth street and Prairie avenue; and in the Kenwood Evangelical church. The new four-mile crib in the lake from which the city water supply is drawn, seat and pivot stones in Jackson street and other bridges, and copings, seat stones and arches of the Twelfth street viaduct, were all supplied from this quarry, which is located at Port Deposit, Md., on the banks of the Susquehanna river, about four miles from Havre-de-Grace, on the Pennsylvania railroad. This granite stands on edge in layers from two inches to four feet in thickness, a peculiarity of no other important quarry. This is a decided advantage in quickly and cheaply producing any thickness of slab which can be handled for pier caps, engine beds and engineering purposes. This quarry has been worked for over seventy years, and this stone is unsurpassed for strength and durability, of uniform gray color and homogeneous in structure. For building purposes the firm have successfully placed the granite from the Matt Breen granite quarries, which are located near St. Cloud, Minn. These quarries produce a granite both red and gray in color. The red is rather coarse in structure, which makes very handsome polished work. The dark gray is a fine granular granite, and

makes excellent platforms and steps. The color is an advantage, being dark enough to hide dirt which accumulates on stone in daily use. The firm also takes contracts for fancy red granites, which are produced at Red Beach, Me., and New Brunswick, Nova Scotia. These granites are mostly used for polished columns, pilasters, rails, etc. The partners of this well-known firm are Messrs. W. B. Lord and C. C. Griswold. Mr. Lord began business in the early part of 1885, and the firm of Lord & Griswold was formed in 1887.

The trade in building materials is one of vast importance in every community, and in any review of this industry due reference should be made to the enterprise of the Joliet & Chicago Stone Company, whose operations are very extensive, and whose business connections extend over a wide area. The headquarters and quarries of the company are located at Joliet, where a very large number of workmen are employed, and whence large shipments of foundation and dimension limestone are made to all parts of the state. The facilities of the company for meeting all demands promptly and satisfactorily are of the most ample and complete character. In the early part of 1887 the company founded their Chicago branch establishment, and opened an office and yard on Thirty-third and Clark streets. The yard has an area of 50x100 feet, and is connected by a side track with the Chicago, Rock Island & Pacific railroad. A large stock of rough stone is constantly on hand here, and every convenience is provided for the receipt, handling and shipment of stock. The business is entirely of a wholesale character, and is under the management of William Douglas, secretary and treasurer, whose office is at 3, 159 La Salle street.

The Watson Cut-Stone Company, office, yards and sawmill 293 Fortieth street, near Vincennes avenue, are dealers in mill block stone, sawed stone and flagging, agents for Euclid bluestone, Killbuck brownstone, Bedford oolitic limestone, and other varieties of building stone and marble, and contractors for all kinds of cut and sawed vault covers and flagging. Their plant is very extensive and equipped with the most modern machinery. The company furnishes and puts up cut-stone work of all kinds, doing a very large business and employing constantly fifty to seventy-five men, ranking among the prominent cut-stone concerns in the city. It was incorporated and organized January 30, 1887. The incorporators and stockholders were Henry Watson, president, and J. H. Outhwaite and Frank A. Hecht. Mr. Watson acquired Mr. Outhwaite's interest, and January 1, 1889, Anthony Beck bought the stock of Mr. Hecht. The present officers of the corporation are Henry Watson, president; Anthony Beck, vice president and manager; and T. M. Braithwaite, secretary and treasurer. Prominent among the many buildings of different kinds for which this company has furnished, cut and erected the stone work are two buff Bedford stone houses for Edward Mandel, on Forty-first street and Grand boulevard; a buff Bedford stone residence for J. S. Smith, on Vernon avenue; several buff Bedford stone buildings for S. R. Pruyne, on Vernon, South Park and Ellis avenues; a fine buff Ottawa stone residence for J. P. Smith, at Fifty-third street and Lexington avenue; several houses in which different kinds of stone were used, for C. Landt & Co., all on the south side; a fine Printice brownstone residence for D. Burke, at Fifty-third street and Lexington avenue; a row of stone houses for Julius A. Col-

man, on Forty-sixth street and Lake avenue; the Devoushire buildings for a syndicate, of buff Bedford stone, on Wabash avenue; E. H. Valentine's Portage red stone residence, on North State and Goethe streets; several brownstone houses for A. F. Shuman, on Stony Island avenue; a buff Bedford stone residence for H. F. Hahn, on Grand boulevard; M. O'Callahan's buff Bedford stone flat building, on Forty-second street and Vincennes avenue; a fine Portage redstone residence for Mrs. Sarah Gilbert, on Forty-second street and Grand boulevard; three buff Bedford stone apartment houses for Duplicy Brothers, in Hyde Park; a Georgia marble residence for A. Hart, on Michigan avenue and Thirty-sixth street; a buff Bedford stone residence for Mrs. L. Day, on Drexel boulevard near Forty-third street; a Georgia marble residence for H. H. Field, in Kenwood; several rows of buff Bedford stone houses for Barry Brothers, on Drexel and Grand boulevards; a buff Bedford stone residence for Dr. E. G. Hirsch, on Grand boulevard; a buff Bedford stone residence for C. L. Willey, on Michigan avenue; a Georgia marble residence for C. R. Cave, on Grand boulevard; and a buff Bedford stone residence for A. Loeb, on Grand boulevard. The great success of this concern is due in no small degree to the able management of Mr. Beck, who though comparatively young in years, is old in business experience, and exceptionally well posted in the building stone trade, and brings to bear upon the affairs of the company a trained judgment combined with practical skill and unbounded enterprise.

The Berlin & Montello Granite Company has extensive quarries at Berlin, Montello and Portland, Wis. Its office is at 162 Washington street, and its officers are J. H. Shepard, president; J. H. Anderson, vice president; W. H. Bairstow, manager, and C. B. Beach, secretary and treasurer. The quarries at Montello and Berlin came into possession of the company in 1888, and that at Portland in 1889, and though they had been previously worked, they have all been practically developed since the dates mentioned. After a thorough trial of the stone produced by these quarries, it was found that it was not only admirably adapted for paving blocks, but that it was specially fitted for building stone, both on account of its beautiful appearance and the ease with which it could be cut and dressed. It is claimed that no granite has been found in the West that will split so evenly or cut to such advantage into building stone as that found in these quarries. A ready and profitable market has been found for all the stone that can be got out of these quarries, both for building and paving purposes. The Berlin and Montello granites differ from any of the other granites that are on the market in the closeness of their texture and hardness, being at least fifty per cent. harder than the Quincy granite, and having a very fine grain, and lack the soft ingredients of the common granites, such as mica and feldspar, and for this reason takes a much higher polish than the common granites. And hence the great contrast between the polished and the hammered surface, also between the rough or rock face and the hammered surface. The Berlin stone is of a dark blue tint, and hammers very white, while it polishes a dark purple and very beautiful. The Montello is a bright chocolate color and a fine variegated mixture, and takes a very high polish, as there is very little mica in it. It has also a great contrast between the hammered surface and the natural cleavage and polished surface. The company is prepared

to furnish estimates on these granites for buildings, columns, pilasters and ornamental work, and its plant includes a well-equipped polishing department, supplied with cutting lathes. It can turn out a column three feet six inches in diameter by fifteen feet in length.

Dolese & Shepard, paving contractors, and manufacturers and dealers in crushed stone, cinders and limestone for flux, take a leading position, and are the most extensive operators in their line in the city. The partners are Messrs. John Dolese and J. H. Shepard. The former was born in Chicago, and the latter is a native of Ohio. They founded their enterprise in 1868, and it has been energetically and successfully conducted from first to last, and to-day the house of Dolese & Shepard is one of the largest and wealthiest contracting firms in the city. The firm has a well-appointed central office at No. 162 Washington street, and spacious yards on the Grand boulevard and Fortieth street, with quarries at Cheltenham, Ill., on the Illinois Central railroad, and at Hawthorn, Ill., on the Chicago, Burlington & Quincy railroad. The firm employs six hundred hands at its quarries, which are equipped with powerful stone crushers, operated by steam power. Most of the crushed stone used by city contractors for foundations for granite blocks is obtained from this firm, which also supplies limestone for flux to the North Chicago Rolling mills and the Union Rolling mills. The firm executes every description of paving, and gives particular attention to building macadamized roads, drives and boulevards. Dolese & Shepard have built nearly all the drives and boulevards in Hyde Park, and employ constantly on the streets over two hundred men. For carrying out promptly and satisfactorily every description of road work, the equipments and facilities of this concern are of the most ample and perfect character.

Western Stone Company. This company was incorporated in October, 1889, and is the successor to the Singer & Talcott Stone Company, the Excelsior Stone Company, the Chicago & Lemont Stone Company, the Corneau Stone Company, the Bodenschatz & Earnshaw Stone Company and the Lockport Stone Company, their quarries being at Lemont, Ill., and Lockport, and their yards at the corner of Twenty-third street and Archer avenue, from 1 to 17 West Polk street, 264 South Market street, 325 to 349 Hawthorne avenue, corner of Lake avenue and Fortieth street, and the corner of Sixty-third and Wallace streets. The officers of this company are: J. L. Norton, president; B. J. Moore, vice president and general manager; H. L. Draper, secretary. Some of the largest stockholders are L. C. Huck, A. W. Young, J. H. Dwight, T. J. Leffens, W. T. Baker, D. V. Purington, C. B. Kimbell, Charles L. Hutchison and E. G. Foreman. The company's office, up to May, 1890, was at 159 La Salle street, but since that time they have been at 319 and 320 Chamber of Commerce building. This company does a business that is gigantic in its proportions, and although their business is principally local they have furnished stone for the erection of some of the finest and handsomest buildings in the city, and are also extensive dealers in sidewalk stone. Their goods are shipped to them by railway and canal, and they have about thirty-five boats, tugs and barges in constant use, and employ about fifteen hundred men the year round. The talents possessed by the members of the company give them well deserved prominence in their particular line of business, while their desire to please their patrons in every particular has made

them esteemed and respected as business men and gentlemen. They are prepared to meet all orders with promptitude, and as they are careful and exact in their transactions, they have the pleasantest relations with their patrons and the general public. Mr. Moore, the vice president and general manager, has been in the stone business for the past fifteen years and thoroughly understands every detail of the business. He was a member of the Excelsior Stone Company.

Birney James Moore is the present affable and efficient vice president and general manager of the Western Stone Company, manufacturers of and dealers in rough, sawed and machine-dressed stone. He was born in Massachusetts in 1843, his parents being Orrin and Harriet (Hayes) Moore, natives of New England and farmers by occupation, and was reared and educated in the East, finishing in the thorough schools of Hartford, Conn. In 1862, before he had attained his majority, he enlisted in Company A, Sixteenth Connecticut regiment, as a private, and after serving for the period of five months was forced to resign on account of ill health, having, in the meantime participated in the bloody battle of Antietam. He soon regained his usual health and immediately thereafter entered upon a course of study at Bryant & Stratton's business college, at Providence, R. I., continuing until June, 1864, when he came to Chicago, and here he has since resided. Mr. Moore's first business engagement in this city was as clerk in an iron store for two years, succeeding which he served in the same and other capacities in various lines of business with greater or less success and profit until 1877. During the great fire he occupied a position in an insurance office. His connection with the stone business dates from 1877, at which time he accepted a clerkship with the Excelsior Stone Company and continued with the same until 1889, passing through all the grades of promotion until he became secretary and treasurer. In October, 1889, when the Western Stone Company was formed by the consolidation of the Singer & Talcott, the Excelsior, the Chicago & Lemont, the Corneau, the Bodenschatz & Earnshaw, and the Lockport Stone companies, Mr. Moore, by reason of his experience, ability and popularity, was made secretary and general manager, the important duties of which position he performed until January, 1891, when he was made vice president and general manager. At one time, for three years, until the dissolution of the concern, he served as president of the Chicago Building Stone Company. Since his connection with the stone interest, he has devoted his entire time to its expansion and perfection, and now sees it figure as one of the most important branches of the building interests. What he has done has had not a little to do with the vast improvements in the manufacture of building stone, and he stands among the leaders in the stone interests of Chicago.

Herbert L. Draper, secretary of the Western Stone Company, Chamber of Commerce building, comes of an old Vermont family, and is the younger of two children born to the union of Nelson C. Draper and Asenath M., whose maiden name was Ballard. The father was born in Vermont in 1835, and came to Chicago at about twenty years of age, but remained only a short time, going to Minnesota, where he engaged in the lumber business and continued until 1867, when he came again to Chicago and was a successful wholesale

grocer here until his death in 1883, at which time he was a member of the well-known wholesale firm of Gould, Draper & Company, at the same time acting as United States government tea inspector for this city. He was a prominent and well and favorably known business man and a thirty-second degree Mason. The mother of H. L. Draper was born in Georgia, Vt., in 1831, and now resides at Oak Park, Ill., where her elder son, Arthur N. Draper, is cashier of Dunlop Bros. bank. H. L. Draper is a native of Hastings, Minn., born July 19, 1864, and in 1867 came to Chicago, which has since been his home. He first attended the public schools, and in 1882 graduated from the Chicago high school, and in the fall of 1882 entered Williams college, where he remained for more than a year. In 1884 he entered the employ of the Board of Trade firm of Underwood & Matthews, in the grain shipping and general commission business. Here he continued for three years, and then took service as bookkeeper with the Excelsior Stone Company, and continued in that capacity until the concern was bought out by the Western Stone Company in 1889. From 1889 to January, 1891, he was cashier of the Western Stone Company, and in January, 1891, he was elected by the directors of the company to the responsible position of its secretary, which position he now holds. He is a member of the Royal Arcanum and of the Zeta Psi college fraternity. He is a prominent young business man, whose future in this great and growing city promises to be brilliant, judging from his rapid advancement thus far.

William W. Nicholl is an agent for buff and blue Bedford building stone, with office at 708 Tacoma building, representing the stone interests of Indiana in this city. He was born in New York city, August 11, 1853, a son of James and Jane (Lawson) Nicholl, the former of whom was born in Scotland, December 14, 1833, and came to the United States in 1851, settling in New York city. James Nicholl was a stonecutter by occupation until 1860, the last five years being spent in Canada, but at the end of that time he took up his abode in Ohio, where he now lives at North Amherst. He is general superintendent and one of the leading stockholders of the Cleveland Stone Company, of which he was also one of the organizers. His sons, with the exception of one, are engaged in the stone business. His wife was also born in Scotland in 1833. William W. Nicholl is the eldest of seven living children, all sons, and his education was acquired principally by contact with the business affairs of life. He was reared to a knowledge of the stone business, and in 1874 came to Chicago, and during the two subsequent years was in the employ of Worthington & Sons, stone dealers of Ohio. In the spring of 1877 he went to Dallas, Tex., but in 1878 returned to Illinois, and the same year went to Bedford, Ind., since which time he has been connected with the Bedford stone interests, his home having been in Chicago since the spring of 1891. He is a practical and successful business man, and has become extensively known. He is a member of the Builders & Traders' exchange of this city, also of Bedford lodge No. 14 of the A. F. & A. M., of Bedford, Ind. He was married, January 3, 1877, to Miss Kate M. Huddleston, a native of Warsaw, Ill., by whom he has one child, Ellis H.

Charles J. Sward is a cut-stone contractor, and is located at Thirty-third street and the Rock Island railroad tracks. He does a general business in his particular line, and prides

himself on doing nothing but first-class work. With a large force of men, he is prepared to furnish in any quantity the best quality of material in the shortest space of time. He merits and receives a large patronage and the confidence of business men.

M. Walsh is a prominent dealer in sand and gravel, and has his office at 159 La Salle street and his yards at 447 Hermitage avenue. He started in the business in which he is now engaged in 1880, and has since handled with satisfactory financial results Indiana sand and gravel and lake sand and gravel, both of which are of the very best quality and are exceptionally free from foreign substances. Mr. Walsh is well known, being a member of the Builders & Traders' exchange, and he has done a large business with some of the foremost builders and contractors of this great city, his product being used for plastering, roofing and paving as well as in various other ways. Besides the business above mentioned he is doing a large excavating business, which necessitates the ownership of a large number of horses, and the various occupations in which he is engaged bring him in about \$20,000 annually. Mr. Walsh is a man of progressive views on all subjects, is very practical, and in the conduct of his business affairs he shows an honesty of purpose and a desire to do with all his might what his hands find to do, that have won him the friendship of all with whom he has business relations. He is married and is the father of two children—a son and daughter. He has a pleasant and comfortable home at 447 Hermitage avenue.

The Garden City Sand Company commenced business in the year 1883, and were the first to commence the shipping of sand by rail to this city. It was incorporated in 1884, under the name that it now bears, the entire original capital amounting solely to a loan of \$300. It has prospered, and the worth of the company at the present time, above liabilities, amounts to \$100,000. The present manager, C. B. Shefler, was born in 1847, near Mansfield, Ohio. He commenced railroading in a minor position, when ten years of age, and continued constantly at the business until May, 1890, at the same time managing the business of the sand company and successfully attending to his railroad affairs, without serious inconvenience to himself or detriment to the business. He ran a passenger train for the Pennsylvania railroad for twenty-four years, the last six years being on the limited express, which allowed him to spend the greater part of his time in Chicago. N. C. Fisher, secretary of this company, was born in 1856 and was brought up in Ohio, coming to Chicago in 1879, where he engaged in the service of the Pennsylvania railroad at the Union depot in 1881, continuing in the service of that company until 1887. In the meantime he attended to his duties as secretary of the company until his labors became too great, when he was obliged to relinquish his position with the railroad company and give his entire attention to the business of the Garden City Sand Company. His education was obtained in the common schools of Bucyrus, Ohio, finishing the course at the high school and afterward taking a course at Eastman's college at Poughkeepsie, N. Y., after which he left for Chicago, where he has since made his home. Mr. Shefler and Mr. Fisher commenced business on their own hook, not knowing whether the experiment would be a losing one or not, inasmuch as they were severely ridiculed by the parties who were then furnishing sand by boat in this city, stating that the sand of this com-

pany was full of loam, dirt, etc., and that it could not be used successfully in the construction of buildings and other work of like nature. Notwithstanding this assertion, the business has grown to such an extent that at the present time their sales amount to upward of eleven thousand cars per year. They purchase molding sand as far east as Albany, N. Y., and ship as far west as Colorado and Montana. The mining of silica, or white sand for glassmaker's use, is a very important department of their business, and consists of the mining of sand, which is commonly known as St. Peter sandstone, by the blasting process, after which it is taken up by pumps, carried to vats and thoroughly washed by a system of washing machinery. It is then taken from the vats and carried to bins for draining and from there is taken to the drying machine, after which it is removed from the dryer and stored in elevators on the same plan as ordinary grain elevators, where it is kept ready for shipment at any time they may receive orders. In addition to dry sand, they also ship damp sand and drained sand for the same purpose. The silica sand is shipped for various purposes, such as stone-sawing, for the making of hard finish for walls, for blast furnaces, for the manufacture of fire brick and various other purposes. Their shipments of building sand at the present time consist of upward of forty cars daily, to say nothing of the sand carried by their own boat from various points on the east shore of Lake Michigan, from Kenosha, Wis., and from their property on South Manitou Island, Mich., where they have very heavy investments, both in the way of gravel machinery and sawmill, also several thousand acres of land, which they intend improving as a summer resort. This island consists of about five thousand acres of land, located a little over seven miles from the east shore of Lake Michigan, and is in a direct line from the Straits to Chicago. A large number of vessels pass there daily, and it is in full view of the bay, which is one of the best natural harbors on Lake Michigan. A beautiful lake, fully one mile in length, is located in the interior of the island, and is admirably adapted for bathing purposes, fishing, rowing and other sports of like nature. This island is destined to become one of the most noted summer resorts on the great chain of lakes, having many advantages not possessed by any other resort in the North. They have their own yards in various parts of Chicago, accessible both by rail and by water, and their outfit for the handling of sand is a most complete one. They are supposed to handle more kinds of sand, and in greater quantity, than any like concern in this country. In the fire brick department their sales have increased from year to year to such an extent that they compare favorably with the sales of the largest and oldest concerns in their line in the city, handling all the standard grades of brick at moderate prices and profits, and for this reason they are able to secure a larger business than older establishments who do not figure in the same manner. Their roofing and paving gravel is obtained principally from South Manitou Island, Mich., which is known to contain only twenty per cent. of lime, while the lake shore gravel, found in the vicinity of Chicago, is found, upon analysis, to contain from thirty to thirty-four per cent. No large building has been constructed in this city, in recent years, that has not been furnished with more or less material by this company, either to the mason, the plasterer, the tilesetter, the contractor who furnishes the concrete flooring, or various other trades who use sand more or less in

putting up their work. Among the large buildings which were furnished almost exclusively with materials by this company, especially the sand used in their construction, is the Auditorium, the Rookery, the Phenix building, Adams Express building, the Owings building, James H. Walker & Co.'s building, the United States Appraiser's building, the Grand Central depot, and many others.

The Chicago & Northwestern Sand & Gravel company is organized with W. D. O'Brien as president, M. McDermott as secretary, and D. O'Connell as treasurer and manager. The sand plant of this company, located at Benton Station, Lake county, Ill., is a valuable one. The business office is at room 91, 159 La Salle street. Nothing but lake shore sand is handled by the Chicago & Northwestern Sand & Gravel Company, and it is listed by engineers as of the best in the market, and is recommended for exclusive use in the construction of tunnels and all city buildings. It was also tested and recommended for the United States treasury building. Some of this sand was used in the construction of the old Chamber of Commerce building, the Tacoma building and the Auditorium building. It has been furnished to nearly all heavy foundries and factories using sand in the city. The company also supplies foundries with coarse and fine sand for molding purposes, and the large stone yards with such sand as they consume in sawing and polishing stone. Their trade with contractors for general building purposes is large, and they supply city contractors and the board of public works with all of the lake shore gravel in use here. Among their customers are all the leading contractors for paving and concreting, among whom their gravel is in great demand, as it is also among contractors for granite block and cedar block pavements, and among roofing contractors. The company has eight miles of frontage on the lake shore. It has a switch from the Chicago & Northwestern railroad to its plant, with complete equipage. An adjunct to its plant is a natural river known as Dead river, forming the only natural harbor between Chicago and Milwaukee.

The Knickerbocker Ice Company. E. A. Shedd & Co., the predecessors of this concern, began business in 1876. The Knickerbocker Ice Company was incorporated in 1885, and is the third most important ice company in the United States, the Knickerbocker Ice Company of New York ranking first, and the Knickerbocker Ice Company of Philadelphia second. The officers of this corporation are E. A. Shedd, president; J. S. Field, vice president, and C. B. Shedd, treasurer. The company's icehouses are located as follows: Wolf Lake, Ind.; Crystal Lake, Ill.; Fowler Lake, Oconomowoc, Wis.; Monona Lake, Madison, Wis.; Winnebago Lake, Oshkosh, Wis.; McHenry, Ill.; Calumet Lake, Pullman, Ill.; South Holland, Ill.; Hyde Park, Chicago; Englewood, Chicago; Brighton Park, Chicago; Stewart avenue, Forty-third street, Chicago, and Kinzie and Leavitt streets. The principal office is at 134 Van Buren street, and the several branch offices are located as follows: Twenty-second street and Stewart avenue; Sangamon and Lake streets; Leavitt and Kinzie streets; Fourteenth street and Ogden avenue; Thirty-eighth street and Western avenue, Brighton Park; Fortieth street and Vincennes avenue; Forty-third street and Stewart avenue; Fifty-fourth street and Lake avenue, Hyde Park; Sixty-third street and Wentworth avenue, Englewood; Seventy-fifth

street and Dobson avenue, Grand Crossing; Ninety-second street and Baltimore & Ohio railway, South Chicago, and One Hundred and Fifteenth street and Stephenson avenue, Pullman. Ever since this business was established, the company has been handling brick, gravel, sand, lime, cement, stucco and hair. There is hardly a large building in the city into which some material furnished by the company has not gone at one time or another, and they have furnished large amounts of sand and gravel for filling and grading. They are prepared to furnish any amount desired from a wagon load to a train load, and have special facilities for prompt delivery, each of their branch offices being connected with their main offices by telephone, and having a superintendent and clerks in charge. Their sand pits are equipped with steam shovels and other facilities for excavating and loading material. In addition to the large amount of lake shore gravel, beach and bank sand they have supplied as above stated, they have furnished much material in their line to several of the railroads centering in Chicago. The Kniekerbocker Ice Company's mammoth icehouses on Wolf Lake, Ind., are the largest in the world, and those at Crystal Lake, Ill., and at Fowler Lake and Monona Lake, Wis. (the former at Oconomowoc and the latter at Madison), equal, if they do not exceed in magnitude, any others in the country except the ones at Wolf Lake, an illustration of which accompanies this sketch.

Artesian Sand & Gravel Company is one of the leading firms of the kind in the city. Its officers are George A. Murrell, president; W. H. Babcock, vice president; F. E. Talbot, secretary and treasurer. It was organized March 1, 1890, with a cash capital of \$12,000, since increased to \$18,000. Its plant is located at Plano, Ill., on the Chicago, Burlington & Quincy railroad, and consists of two of the Gates Iron works revolving screens, fed by a belt elevator. The material is all washed as it goes through the screens, and the different grades drop from screens into bins, and from the bins is spouted into cars at the rate of two carloads an hour. The machinery is so arranged and the capacity is such that the output can be doubled by simply putting in more screens and enlarging the bins. Although this company has been in business only a short time, its trade is rapidly increasing, for it is prompt in its dealings with patrons and honorable and upright in business methods, and its goods give satisfaction to all who use them. Its sand and gravel are shipped to this city and sold to pavers, roofers and contractors. The company supplies gravel for paving and roofing, torpedo sand and gravel, artesian sand of the best grade in the market and a superior grade of Indiana bank sand. It is able to offer to the users of sand and gravel material from its artesian lake of the finest quality sold in this market, in any quantities desired. This material is, in no sense of the term, bank gravel, being pure water gravel taken directly from the lake, where it has lain for ages. All their material is screened by their submerged process, securing in all their sand or torpedo absolute freedom from small or large stones. Their sand is free from all dirt or foreign substances, is very sharp, and will make a mortar that will last as long as any stone or brick in use. They supply any grade desired, from fine sand to paving gravel or cobble stone. Their specialties are paving gravel for block or granite pavement; roofing gravel, absolutely free from grit or

large stones; torpedo for concrete or asphalt work; torpedo sand for foundries and rolling mills; plastering sand, the best brought to this market, screened ready for use. They have also a superior grade of Indiana bank sand, much coarser and cleaner than has before been brought to this market. They claim for their material absolute purity, unlimited supply at all times, evenness and reliability of grade. The president, Mr. Murrell, was formerly in the real-estate business, and is well known, having made his home for a number of years in Chicago. The vice president, Mr. Babcock, is with the insurance firm of Ducat, Lyon & Co., and Mr. Talbott, secretary and treasurer, was, since 1864, until recently, in the lumber business in this city. The office of this company is at 624 Home Insurance building.

Ernest V. Johnson, treasurer and general manager of the Pioneer Fire Proof Construction Company, was born in New York city, February 14, 1859, and is the son of George H. and Marie (Salkeld) Johnson, natives of Sheffield, England, who settled in New York in 1852. The father was a prominent architect and civil engineer, and was for ten years manager and chief designer of the New York architectural iron works. Subsequently he designed and erected seven fireproof grain elevators, and later turned his attention to fire-clay tile manufacture and fireproof buildings. In 1871 Chicago offered a wide field for his genius, and coming hither he entered at once upon building up a system of fireproof construction with hollow tile, a system with which he was connected until his death, in August, 1879, and which now enters largely, if not wholly, into all great buildings. Ernest V. Johnson received a practical education in eastern academies and in the Cooper institute, gaining a knowledge of engineering and construction, which later-day practice has perfected. From his youth he has been conversant with clay manufacture, and since 1879 has been familiar with brickmaking in all its departments. Prior to 1871 he served an apprenticeship of seven years in the engineering and real-estate office of Stephens & Spilsbury, New York, gaining thereby an acquaintance with business methods of inestimable value. After the death of his father he secured a half interest in the business established by his father. He has had the management of the fireproofing department, and under his wise direction the great plant at Ottawa, Ill., was designed and built and enlarged until it now covers nine acres and presents twenty-six down-draft kilns, with a capacity of fifty thousand tons of fireproof hollow tile per annum. The Pioneer Fire Proof Construction Company was organized in 1880, with a capital of \$250,000. Of this company, Mr. Johnson has been treasurer for ten years, with George M. Moulton (a biographical sketch of whom appears on other pages), president, and Charles F. Eiker, secretary. He organized the Peerless Brick Company in July, 1889, and was chosen president, with A. T. Griffin, vice president, and W. W. Ramsey, secretary and treasurer. In 1890 he was elected treasurer of the Northern Hotel Company, owners of the great fourteen-story building on the northeast corner of Jackson and Dearborn streets. He is vice president of the River Bank Coal Company, of Streator, Ill.; a member of the Union League and of St. Bernard commandery, Knights Templar. In July, 1888, he married Mrs. Eva L. Brooks, of Philadelphia. This union perfected his social relation to Chicago, even as his successful business enterprises perfected his commercial relation to this city.

The Illinois Terra Cotta Lumber Company, manufacturers of and dealers in porous fireproofing, 606 Tacoma building, was organized in 1885. Its officers are C. W. Brega, president; E. W. Syer, vice president; and A. W. Beidler, secretary and treasurer. Its works at Pullman, Ill., are extensive and among the best appointed and equipped in this branch of manufacture. This company is the sole owner of the rights of manufacture and sale of porous terra cotta in Illinois. It furnishes hollow flat arch tiles for iron construction, flooring tile for wooden joists, ceiling tile, partition tile, wall furring and deafening, column, girder and beam casings, etc. Severe tests have proven the material furnished by this company to be the best fireproofing material in use. The business of this establishment has been large from the outset, and has more than kept pace with the wonderful building development of the city, and at this time the company is regarded as one of the leading fireproofing concerns in the West. Its officers are men of practical experience and much business ability, and they are well and favorably known to all branches of the building trade, not alone in Chicago, but throughout the country. Some of the principal structures in Chicago into which the material of the Illinois Terra Cotta Lumber Company has gone are the following: the Pullman building, the Brother Jonathan building, the Pickwick flats, the Rookery building, the Auditorium building, the Chamber of Commerce building, McVicker's theater building, the Monadnock building, and many other structures of like character. Among residences here may be mentioned those of N. S. Jones, C. W. Brega, Ferd W. Peck, and George S. Morrison. Many important structures throughout the West are also of this material.

W. D. Gates, president of the American Terra Cotta and Ceramic Company, of Chicago, has a large office at 159 La Salle street. The works of this company are located at Terra Cotta, Ill. Mr. Gates is a native of Ashland, Ohio, where he was born in 1852. The same year his parents removed from Ohio to McHenry county, Ill., where W. D. Gates received his early education in the public schools, and later graduated at Wheaton college, Du Page county, in 1875. Succeeding this he came to Chicago, and began the study of law in the law college here, but, before completing his course his father died and he returned home, where he remained two years to settle up his father's estate. In 1878 he returned to Chicago and resumed the study of law, and in 1879 was duly admitted to the local bar. He practiced his profession for several years, but finally seeing an opening which promised to be more remunerative, he drifted into the clay working business, with offices at Terra Cotta, Ill., and at Chicago, which business he operated alone until the organization of the present company, with Mr. Gates as president, and W. H. Edwards as secretary and treasurer. They are doing a large business, and have furnished terra cotta to the following buildings among many others: The south side pumping station, the First regiment armory, the Caxton building, the Manhattan building, the Presbyterian hospital, the theological seminary, the Russell buildings, the Farwell building, the Kent county courthouse, the Jamison block at Spokane Falls, Wash.; the Board of Trade building at Fort Worth, Tex.; and the Kelly block at Kansas City, Mo. It will thus be seen that with characteristic Chicago energy they have extended their work far beyond the confines of Chicago. They are members of the Builders & Traders'

exchange. Mr. Gates was married in 1878 to Miss Ida Babcock, of La Grange, Ill., by whom he has four sons and a daughter.

Joseph Eastman began business as a contractor of plastering in Chicago, in 1879. For some years he made a specialty of government work, having had contracts in nearly every state east of the Rockies, but of late his work has principally been large fireproof buildings in Chicago, where clay tile has been used for partitions and floor arches. Seeing the necessity of a cheaper class of fireproof buildings, where wooden joists are used in place of iron beams, and still having the building almost absolutely fireproof, he has invented a fireproof slab made of cinders, plaster paris and fiber, forming a very strong partition without studding or lath, and the same slab can be used for forming the ceilings and lining the outside walls. In fact, this slab virtually forms the partition and the first coat of mortar, needing only to have a finish coat in order to complete the plastering. Mr. Eastman has another slab or arch forming the floor, which takes the place of rough wooden floor strips and deadening, to which the floor can be nailed, as it holds a nail nearly as well as wood. The weight of the partition is no greater than an ordinary job of lath and three coats of plaster, thus saving the weight of the studding and lath—being the lightest partition made. The slabs are formed plain on one side, with ribs made of the same material on the other side running at right angles, intersecting one another, and to form a partition the slabs are laid up back to back with the ribs coinciding and facing each other, forming hollow spaces, thus making the partition light and a non-conductor of heat and sound. It is expected to make these slabs by machinery, by which means this style of building can be constructed as cheaply as the ordinary wooden fire trap. Within the last few weeks Mr. Eastman has taken out patents on this; but as his time is taken up with heavy contracts and World's Fair work now, he will not for some time be able to place this partition on the market. He expects that this will revolutionize, to some extent, the building of the cheaper class of buildings, as he can build a frame house to look like stone that can not be burned down.

A company has been organized in New York, of which Col. John Weir is president, and a branch of which it is reported will be established in Chicago, which is developing the uses of litho-carbon, recently discovered in Texas, which it is claimed is a wonderful mineral, heretofore unknown to science, and destined to work a revolution in many important fields of commerce. It is said that vast layers of this new material have been found in central and southwestern Texas. It is of a dark brown color and of a spongy or rather clayey consistency. The broad veins in the ground appear to be a mass of sea shells, held together by sand covered with a dark, sticky film of the color of dark brown sugar. It has no taste and no odor. The veins of the new material range from two to forty feet in depth. In most places it is near the surface of the ground. Samples of this new material were examined at first by a number of chemical experts, and none of them could tell what it was. The new material resisted completely the action of water, heat, acids and alkalis, and that proved, if the secret was once learned, the new material would be a startling discovery. Finally, one chemist applied a bath of common benzine to the new material, and that had the desired effect

of separating it into two parts—one the white sand and sea shells, the other the new mineral, which was of a brilliant black color and had the consistency of cold molasses. It has been proved that litho-carbon will make the most perfect insulator yet known. President Weir says: "I have a certified statement from Professor Hamilton, the electrician of the Western Electrical Company, saying that under the most exhaustive tests a wire having a covering of this litho-carbon revealed a resistance of over seven thousand megohms per mile. No other wire known shows a resistance of one thousand megohms per mile. You can take the simple naked wire and soak it in a liquid made from litho-carbon, until the wire is merely covered with a film, and it will then stand proof against six hundred degrees Fahrenheit, and, besides this, the thinnest film insures perfect insulation. The litho-carbon may also be used as a paint that will resist the action of heat, salt air, salt or fresh water, or gases of any kind, and can also be used as a varnish with the same result. The new material will soften under the influence of enormous heat, but it can not take fire and burn. It can be rolled into a tissue or large leaves, and be used in the manufacture of goods that are entirely waterproof, and for this purpose is especially desirable because it is odorless."

William Pigott, president of the Plasterers' association, with office at 260 West Harrison street, was born in County Cork, Ireland, in 1829, a son of David and Mary Pigott, who died in the Emerald Isle, having become the parents of five sons and four daughters. In the land of his birth William Pigott was reared and educated, but in 1846 he immigrated to America, taking passage on a sailing vessel at Cork and landing at Quebec after an ocean voyage of seven weeks and three days. He soon after went to Oswego, N. Y., where he remained a few years learning his trade, then went to Syracuse, where he remained three or four years. September 3, 1854, he first set foot in Chicago, and here began working by the day, continuing until 1876, when he began contracting for himself, in which he has continued since. His business has always been a paying one, for he is a thorough master of his trade, lives up to his contracts on every possible occasion, and is honorable and conscientious in fulfilling them. He is president of the Boss Plasterers' association, which has had an existence of about ten years, and is also a member of the Journeymen's association. He was married in Syracuse, N. Y., in 1853, to Miss Anna Long, by whom he has five children: David, Mary, Lizzie, William G. and Walter. Mr. Pigott and his wife are members of the Catholic church.

Thomas Fitzgerald is one of the oldest, best known and most competent plasterers of Chicago. He was born in Ireland in 1839 and was brought to the United States in 1848. The mother died in Wisconsin and the father returned to Ireland, where he died at the age of seventy-five years. Thomas began learning the plasterer's trade, in 1856, with the firm of Donahue & Fitzmorris. Ten years later, having learned all the details of his trade, he began business for himself. This trade has continually increased under his able and energetic management until he now employs, on an average, thirty men in all portions of the city. His excellent work may be seen in many of the finest buildings, public and private, among which may be mentioned Leroy Payne's building, now the Richelieu hotel; Uhlich's building, at the corner of Twenty-second and State streets; in the establishment of Eckhart &

Swan, at 207 East Madison street; in H. E. Bucklen's block, at the corner of Michigan avenue and Peck court; in the Academy of Music, on Halsted street; in the Kints building, on Clark near Van Buren street; in several large and fine structures for Chancellor L. Jenks; in the Foss building, at the corner of Thirty-third street and Indiana avenue; in the hotel building at the corner of Wabash avenue and Fourteenth street; in the large block of buildings on State and Twelfth streets; in the block for David Pine; in the Pevey Opera-house building, in Sioux City, Iowa; in the fine theater building at Burlington, Iowa; in the hotels of H. E. Bucklen's, at Elkhart, Ind., and St. Joseph, Mich., and many other buildings in this and other cities. He is a member of the Builders & Traders' exchange, also of the Plasterers' association, and resides at 411 West Fourteenth street, his house and grounds being worth \$12,000. He is without doubt one of the leading plasterers of the West. In 1870 he married Miss Emily L. Coleman. They have seven children: John, Thomas, Frank, Garret, Arthur, James and Mary.

The Webb family, for the past forty years, has been well known to the best residents of Chicago. The pioneer of this family here was John Webb, who died suddenly while attending divine services at the Centenary Methodist Episcopal church in 1883. His grandson, George A. Webb, was born here May 19, 1855, and is a son of Samuel and Mary (Bromfield) Webb, natives of England, who came to the United States while yet children. George A. Webb is the eldest of their five children, and is now, and has been for a number of years, one of the most successful mason and plastering contractors and jobbers of Chicago. He makes a specialty of important alterations and repairs, and is thus actively engaged. He keeps on hand, at all seasons, a large stock of the best line of materials, such as mortar, plasterer's putty, cement, plaster of paris, lath, etc., ready for use and for sale. His place of business is at 55 south Morgan street, or at the rear of the northwest corner of Madison and Morgan streets. Property owners, agents or others entrusting work to him will receive prompt attention, he having the facilities to handle all branches in the building line with neatness and dispatch. Mr. Webb was educated in this city and began learning his trade at the age of fifteen years. He has been successful in business, and now owns considerable real estate and is in prosperous circumstances. He is a practical mechanic, a clear-headed, sagacious business man and a good citizen. He was married in 1878 to Miss Mary A. Parker, a native of Chicago, who has presented him with three children, Elmer, Edna and Grace. Mr. Webb is a member of the Builders & Traders' exchange, is a member of Siloam lodge No. 780, of the A. F. & A. M., and other societies. He lives at the corner of Monroe street and Kedzie avenue, his residence having been erected in 1888. His father, Samuel Webb, is a well-known builder of the city.

Ezekiel Smith has for many years been a successful and active plastering contractor of Chicago. He is a native of Ireland, born in 1843, son of John and Jane (Hazelton) Smith, the former of whom died in Canada in 1859, aged forty-four years, having been a farmer by occupation. The mother died in Canada in 1865, at the age of thirty-one years. The family removed to Ontario, Canada, in 1843, and there Ezekiel remained until about the age of thir-

teen years, when he crossed the border and located at Buffalo, N. Y., where he began learning his trade in the employ of T. B. Tilden, with whom he served an apprenticeship of three years. Upon the completion of his term of service, he went to New York city, but after one year there went to Titusville, Penn., and two years later, in the spring of 1866, came to Chicago. From that time until 1870 he worked at his trade as a journeyman, but in the last-named year he formed a partnership with Joseph Eastman in the plastering business, which continued until July, 1874, when it was dissolved, and he continued alone until 1882, when he formed a partnership with William G. Crimp. This partnership lasted until Mr. Smith removed to Chariton county, Mo., where he has a stock farm of eight hundred acres. In 1891, however, he returned to Chicago, and is now engaged again in plastering. He has done a large amount of important work in his line. While he and Mr. Eastman were partners they did the plastering for the Palmer house, the Clifton house, the Matteson hotel, the Atlantic house, the Tremont hotel and the Board of Trade building; and while he was in business alone he did the plastering for the government buildings in this city; Grand Rapids, Mich.; Nashville, Tenn.; Hartford, Conn., and Little Rock, Ark.; the west wing of the Kansas state house, the Union depot of Chicago, the Chicago, Burlington & Quincy office building, and many other large structures, including the state, war and navy department buildings, Washington, D. C., and the state capitols at Austin, Tex.; Indianapolis, Ind., and Atlanta, Ga. He is a member of the Builders & Traders' exchange. Politically he is a republican. He was married in October, 1869, to Miss Mary A. Golding, a native of New York city, by whom he has two children: Alice M. and Lulu J. His farm in Chariton county, Mo., is one of the finest in the state, and upon it he has spent a large amount of money and a great deal of pains. For other buildings upon which Mr. Smith has worked while a partner of Mr. Crimp see sketch of the latter.

Thomas Bird, a finished and experienced plastering contractor, is doing an exceptionally good work in his department of the building interests. He was born in Scotland in 1848, and his father was Thomas Bird, a native of Ireland and a soldier by occupation, afterward becoming a police officer of Perth, Scotland. The mother was formerly Ellen Ryan, who died in Scotland in 1877. Thomas Bird, the subject, was reared and educated in the city of Perth, and on March 1, 1861, commenced to learn the plasterer's trade in that city, continuing later in London, England. He came to Chicago in the spring of 1871, and since that date has been actively engaged in his trade here. He has built up a large business and a good reputation as a skillful and upright business man. He worked first as a journeyman, but since 1881 has been receiving and executing contracts, often upon very large and difficult buildings. He dispatches a large amount of work, and he has the confidence of the building fraternity. He is self made. He is a member of the Builders & Traders' exchange, of the Contractor Plasterers' association, and resides at 1868 Melrose street. He was married, in 1873, to Miss Ellen McDonough and has six children.

Peter Ray, plastering contractor, at 168 Emerson avenue. He was born in Ireland in 1844, and came to this country and city in 1867, and in 1869 began learning the plasterer's

trade. He served for some time with the firm of Doyle & Johnson, where he learned all the details of the business, succeeding which he worked as a journeyman for a brief period, but since 1875 has been working on his individual account. He plastered for one of the first flat buildings of the recent style of architecture constructed in this city, and owned by Ogden, Sheldon, Jones and others. He also plastered for Charles Gossage at Kenwood, but has confined his labors mostly to flat buildings and residences. He is well known, has a valuable business and the confidence of his contracting brethren and the public. He is one of the oldest plasterers in the city, and for the past nine years has been located at 168 Emerson avenue. He was married, in 1873, to Miss Alice Walsh, a native of Rockford, Ill. They have five sons and one daughter: James, John, Peter, Anthony, Edward and Annie. Mr. Ray is a member of the Catholic church, and a member of the I. O. F. He is entirely self made and comes of excellent stock. His father, Anthony Ray, was a native of Ireland, where he died at the age of sixty years. He was a farmer by occupation. The mother also died in Ireland. Mr. Ray is a member of the plasterers' association.

Robert William Thomas, plasterer contractor, is an expert in his business, and commands a patronage both lucrative and extensive. His residence is at 837 West Polk street, and he has a pleasant office at the Builders & Traders' exchange. He was born in Wales, July 28, 1844, and in the land of his birth he received a common-school education. In 1865 he resolved to try his fortune in the new world, and he accordingly came to the United States the same year and immediately made his way to Chicago, which even then gave promise of becoming a magnificent city. Mr. Thomas was thoroughly imbued with the spirit, determination and enterprise for which the inhabitants of the Garden city are so justly noted, and decided that his best plan would be to learn some good trade. He began serving an apprenticeship at the plasterer's trade in 1867, in the employ of the firm of Williams & Roberts, with whom he remained for eight years, during which time he acquired a knowledge of the business and a practical experience which have since greatly aided him in his own ventures. In 1875, as a member of the firm of Thomas & Anderson, he engaged in the plastering business on his own account, and the firm soon had all the work they could successfully attend to, the buildings for which they did the plastering reaching up into the hundreds. They did the work for many of the finest buildings in the central portion of the city, and have had the contracts throughout the city and surrounding suburbs for many magnificent private residences. Their work was at all times characterized by thoroughness, and they were noted for their promptness in filling their contracts. This spirit has characterized Mr. Thomas' work since he has been in business alone, and as his patrons know that he can be relied upon at all times, his patronage has become very large. After about sixteen years of harmonious business relations, the well-known firm of Thomas & Anderson was dissolved in June, 1891, and now each of the former partners carries on business alone. Mr. Thomas has been a member of the Builders & Traders' exchange for a number of years, and socially is a member of Northern Light lodge No. 544 of the I. O. O. F., and is a charter member of

Scotia lodge No. 244 of the K. of P. In politics he is an uncompromising republican. He was married in 1870 to Miss Elizabeth Rowland, a native of New York, by whom he has two children: Lemuel R. and Ella E. Mr. Thomas has been the architect of his own fortune, and has the satisfaction of knowing that the property which he has accumulated is the result of his own endeavors. His father, William Thomas, was born in Wales in 1826, and was there married to Margaret Rowland, who was also born in that country in 1826. He was a farmer by occupation, and passed from life in the land of his birth in 1886, his wife having died in 1859.

William G. Crimp is a successful plastering contractor, who was born at Plymouth, Devonshire, England, in 1849, being a son of John and Mary (Gidley) Crimp. The father was accidentally killed on a building in England about 1864, at the age of forty-nine years, but the mother still resides in her native land. The father was an extensive and noted English builder. Mr. Crimp was educated in England, and there learned the mason and plasterer's trade. He came to Chicago in the fall of 1872, and here worked at his trade as a journeyman until 1881, since which date he has been taking plastering contracts, often on an extensive scale. In 1882 he formed a partnership with E. Smith, which continued until 1889, but since that date he has been alone. He has done plastering for the following buildings: The new City hall; several of the largest schoolhouses; the Virginia hotel; the Allan apartment building on Oakwood boulevard; the Miller & Chamberlain block, on Forty-third street; the postoffices at Albany, N. Y.; Kansas City, Mo.; Cincinnati, Columbus and Toledo, Ohio; the new state houses of Indiana, Texas and Georgia, and the state, war and navy department at Washington, D. C. He also plastered the Business Men's association and Operahouse at Evansville, Ind., and many others. The variety and unusual extent of his work upon large and complex buildings speak in a most satisfactory manner of the worth and experience of Mr. Crimp as a contractor of his specialty. Perhaps no plastering contractor of Chicago is better qualified for successful and satisfactory work than Mr. Crimp. He is a member of the Contracting Plasterers' association and of the Builders & Traders' exchange, and is one of the leading plasterers of the West. Some of his work can not be surpassed in the United States. He was married in 1887 to Miss E. Eichelberger, of Indianapolis, and has one child, Mary. He is again a member of the firm of Smith & Crimp. They have the contract for the Manufactures and Liberal Arts (\$173,000) building, and the Administration building (\$111,000).

M. Shugrue is an experienced, successful and extensive plaster contractor. He came to Chicago in 1880, and entered the employ of E. Smith & Co., with which firm he learned his trade, and later occupied his time as a journeyman under their direction. In 1885 he began making contracts on his own account, and has since continued with flattering success. He plastered the rotunda of the courthouse, the United States Express building, the west division high school and other important schoolhouses of Chicago, the Kane county (Ill.) courthouse, and scores of residences and flat buildings in the three great divisions of the city. He is a member of the Builders & Traders' exchange. His residence is at 111 Flournoy street.

Charles B. Thompson is the principal member of the firm of Charles B. Thompson & Co., contractors of plain and ornamental plastering, wood, wire and iron lathing at 569 Builders & Traders' exchange. This company gives the very best of references, and has done throughout the city a large amount of excellent work. It did the plastering work for the Manhattan building on Dearborn street; the large Monon block and the Caxton building, also on Dearborn street; the residence of Gen. Walter C. Newberry, at the corner of Erie and St. Clair streets; the residence of Charles C. Heisen on the lake shore drive; about twenty-five residences for Potter Palmer in the vicinity of Elm street and the lake shore drive; the Kinzie apartment building on Chicago avenue and Pine street; Benjamin Allen's residence on Michigan avenue and Eighteenth street: the residence of Dr. Hale at Twenty-second street and Prairie avenue; besides a large number of other buildings in all parts of the city. Mr. Thompson is recognized as a competent, reliable man, and has the confidence of all with whom he is connected in trade relations, and is doing a large and lucrative business. He was born in Barnesville, Ohio, August 10, 1859, and was reared and educated in Belmont county of the same state. At the age of seventeen years he began serving an apprenticeship at the plasterer's trade at St. Clairsville, Ohio, and in January, 1881, came to Chicago and worked for the firm of Tobey & Smith for one year. Succeeding this for two years he worked as a journeyman plasterer, and then began contracting at this trade on his own account, and has continued until the present. January 1, 1888, he took as a partner W. M. Smith, since which date the firm has been Charles B. Thompson & Co. He was married in 1884 to Miss Allie McConnell. They have four children: Lonisa D., Ezra M., Phoebe and Irene Gail. Mr. Thompson has been a member of the Builders & Traders' exchange for about three years. He is a member of Excelsior lodge of the I. O. O. F. and of Garden City lodge No. 145 of the K. of P. His residence is at 111 Wilton avenue. He is an excellent example of a self-made man, is a staunch republican, and a member of the Church of the Redeemer (Congregational). His father, James Thompson, was born in Scotland, and was brought to the United States at the age of about seven years by his parents, who settled in Ohio. He is now well advanced in years, and is a resident of Chicago, and is in the commission business on South Water street with his eldest son. The mother of Charles B. Thompson was formerly Louisa Bailey, a native of Ohio.

Simpson Brothers, contractors for and layers of Portland and granite cement walks and rock asphalt floors, 704 Chamber of Commerce building, Chicago, and 166 Devonshire street, Boston, Mass., is a well-known firm, which has been in existence for twenty-two years, and is doing a large business in asphalt, Portland cement and granite cement (known as granolithic, lithogen or granitoid) pavements. This house furnished the Grand Central depot with the following Neuchatel and Seyssel rock asphalt floors, etc., dynamoroom, tower roof and belfry floor. From the same source was derived the Chicago, Milwaukee & St. Paul Kinzie street freight house floor; the Chicago & Northwestern general offices and vaults; all platforms of the Boston & Albany new station, Springfield, Mass.; the South Framingham, Mass., platforms; the Allston repair shops; the Boston & Albany road's Boston milk depot; the bath-

house and bucket yards of the State penitentiary at Jackson, Mich.; the kitchen, diningroom, laundry and corridors, etc., of the State reformatory at St. Cloud, Minn.; the kitchen, diningroom, etc., of the Cook county insane asylum; the tower and theater roofs of the Chicago Auditorium; the laboratory floors of the Illinois Steel Company, South Chicago and Joliet; the printinghouse floors of Knight & Leonard, 107 Madison street; the Daily News building; and a large number of brewery floors, work on private stables, schoolhouses, police stations, driveways, walks, courtways, basements, laundries, etc. The material furnished by this company is of good quality, durable and susceptible of a good workmanlike finish. It comes under the general head of a class of materials described at length elsewhere in this volume. Simpson Brothers are wide-awake, energetic business men, who are extending their operations rapidly and gaining a firm foothold wherever their work is introduced. This business was established in Boston in August, 1869, by G. Fred and James Simpson, and the Chicago office was opened in November, 1885, by Joseph B. Simpson, under whose able management its business has increased from \$35,000 to \$150,000 per annum, an amount about duplicated in the operations of the Boston office. The Chicago office is the center of a rock asphalt trade covering the entire State of Illinois. In their line, which has been seen includes roofing, floors and sidewalks, Simpson Brothers do the leading business in the city, and this has been brought about through the enterprise and executive ability of Mr. Joseph B. Simpson. This gentleman was born in Sullivan, Hancock county, Me., in 1851, a son of Amos and Amelia (McKay) Simpson. His father, a native of Maine, was of that honored and widely-read-of class, the New England sea captains, and his mother was a native of Boston, Mass. Mr. Simpson was reared and educated in the East, and was connected with the firm in Boston before coming to Chicago, having become a member of it before he attained his majority, and he may be said to have devoted his lifetime thus far to the development of this business. A man of unusual mental capacity and business acumen, he has placed himself among the foremost in his line in the United States. He is no less popular socially than in commercial circles, and as a member of the Union League club, he is known to many of the leading men of Chicago and other cities.

E. B. Perkins, an extensive contractor for Portland cement and asphalt pavements, is one of the few men in Chicago who have made a specialty of this important business on an extensive scale. His active connection with and study of its characteristics have made him a most capable man to perform work in his specialty. He was first connected with his father in the business, but later, having learned its details, he started out for himself, and was thus engaged for about eight years. From the time of the fire of 1871 he worked at this specialty, and is thus one of the oldest contractors in his line in Chicago. His work in cement and asphalt sidewalks, pavement, cellars, basements, swimming baths, etc., has become so perfect that it has reached a high artistic standard. He did the work upon the basements of the Cook county courthouse; the Board of Trade building; the Marine bank buildings; C. H. Durand's warehouse, at the corner of Franklin and Quincy streets; the large structure for J. B. and J. R. Farwell, on Fifth avenue; the Wellington hotel and other build-

ings. Many sidewalks have also been put down by him. His operations have not been confined to Chicago, but have extended westward into many of the principal cities. He is a native of Janesville, Wis., and was brought to Chicago in early boyhood. Here he was educated, and married, in 1884, Miss May Atwood. He is a member of Garfield lodge, of the A. F. & A. M., and St. Bernard commandery No. 35. He is a republican, and resides at 1217 West Jackson street. He has long been a member of the Builders & Traders' exchange.

It seems proper here to mention the Asphalt Block Manufacturing Company, manufacturers of compressed asphalt, block and tile pavement, office No. 102 Washington street; works corner Ninetieth and Lincoln streets. The Asphalt Block Manufacturing Company was duly incorporated in 1881, with a capital stock of \$300,000. The following gentlemen were the officers and directors, viz.: Benjamin H. Campbell, president; Franklin D. Gray, vice president; John M. Clark, treasurer; Henry C. Berry, secretary. The board of directors comprised B. H. Campbell, F. D. Gray, J. M. Clark, Horace M. Singer, Martin Ryerson, John H. McAvey and Charles Tobey. The Asphalt Block Manufacturing Company owns an extensive territory, included in the states of Illinois, Wisconsin and Iowa, and manufactures, sells and operates under exclusive license from the International Pavement Company, sole owners of patents for the United States and all Europe. The company manufactures by its lessees compressed asphalt block and tile pavement for paving streets, alleys, sidewalks, cellars, basements, breweries, vaults, stables, carriagehouses, driveways, avenues, etc. These unrivaled asphalt blocks are solid, durable, water and rat proof, and are unaffected by heat, cold or frost, while any paver can easily lay them. Compressed asphalt blocks and tiles used as materials for sidewalk pavement bear about the same relation to ordinary brick as Belgian-stone blocks do to asphalt blocks for street pavements. They are rapidly gaining favor for such use, and when properly put down, are unsurpassed by any artificial pavement in durability and desirability as a sidewalk. The business is now in charge of Henry C. Berry, secretary, at 127 Dearborn street.

G. A. Schillinger and Fred Schillinger, of the firm of Schillinger Brothers, importers and manufacturers of rock asphalt and Portland cement pavements, have their works at 192 and 194 North Morgan street, Chicago, with offices at 566 to 572 Hamilton street, Toledo, Ohio; 33 Congress street, Detroit, Mich.; and 93 Canal street, Cincinnati, Ohio. The business was first established in Toledo, Ohio, in 1884, and in 1886 Chicago and Cincinnati branches were established, and the firm have since done over six hundred thousand feet of paving, their product being used in the paving of streets, sidewalks, street crossings, driveways, private walks, floors, cellars, laundries, breweries, stables, stores, rinks, roofs, etc. They were awarded the contract for the United States postoffice and courthouse at Cincinnati, Ohio, and have on hand the contracts for the City hall building, Cincinnati; the United States customhouse and postoffice, Toledo, Ohio; Memorial hall building, work for the L. Schlather Brewing Company, the Cleveland Brewing Company, the Cleveland Medical college, and work upon the Garfield monument, besides numerous other jobs in Cleveland; for the B. Stroh Brewing Company; the E. W. Voight Brewing Company, the Exposition Brewing Company,

the Michigan Central Railroad Company, and many others at Detroit; the University of Michigan, at Ann Arbor; the American Brewing Company, of Chicago; Gottfreid's new malt house and elevator building; the Indiana Brewing Company; the residence of J. H. Weiss, on Drexel boulevard; a residence for Franklin H. Head, on State and Banks streets; the United States Brewing Company; the P. Schoenhofen Brewing Company; the Cooke Brewing Company; K. G. Schmidt, of Grant place; William Ruehl, on Ashland avenue; Arnold Brothers, besides numerous school and other public buildings. G. A. Schillinger was born in Germany in 1860, and was there reared and educated. In 1880 he came to the United States, and four years later established himself in the paving business in Toledo, but came to Chicago two years later, and here has since been actively employed, although the firm still does an active business in Toledo. He was married in 1887 to Miss Mary Ulrich, a native of Chicago, by whom he has two children, Roy and Lillie. He is a member of the Builders & Traders' exchange, and belongs to the I. O. O. F. Fred Schillinger is a resident of Toledo. He was born in Germany in 1858, was there educated, and in 1876 came to America. In addition to being interested in the above mentioned business he is also the owner of valuable patents, and is vice president of the Toledo Mosaic Tile works. These gentlemen thoroughly understand the work they are doing, and their contracts are always filled in a very satisfactory manner and very much to their credit. They have made their own way in the world, and by their own industry have obtained a competency and a thriving business.

For the last twenty-five years the Wisconsin white lime has been extensively manufactured at Mayville, Wis., where the kilns and quarries of Charles Ruedebusch and J. H. Andrae are now located. About five years ago the Mayville Lime Company was organized with J. H. Andrae, Charles Ruedebusch and A. O. Andrae as its members, and established an office in Chicago, at Division and Cherry streets, and since that time has done an ever increasing business. The company manufactures the famous Wisconsin white lime, which is one of the finest in the Chicago market. It is extensively used and is very valuable, owing to its intense whiteness. The stone from which it is burned seems to lack any and all colored elements. This gives the lime a whiteness equal to Carrara marble and explains its great popularity among builders. The company also deals extensively in all kinds of imported and domestic cements, plasters, etc. It ships extensively of its manufactures to all the leading cities of the United States, its trade being especially heavy throughout the Northwest, and finds a constantly increasing demand for its product. A. O. Andrae, the manager of the company, to whose energy and attention the present large trade and fine reputation of the house are largely due, came to Chicago in 1888, succeeding Frank Marling as the company's representative. He was born in Mayville, Wis., February 23, 1864, and is the son of J. H. Andrae. He was educated in the public schools of Wisconsin and at the Mayville high school, and for the past five years has been a member of the Mayville Lime Company. He is thoroughly capable, of excellent habits, and although a young man has shown fine business qualities. He is a member of Vesper lodge No. 62, A. F. & A. M. at Mayville, Wis., and is also a member of Lincoln Park chapter, and Apollo commandery No. 1 of Chicago.

Henry Rice of the firm of H. Rice & Son, manufacturers of lime and dealers in stone, rubble, McAdam concrete, cement, stucco and hair, with extensive quarry at Grand avenue and Ohio street, and also twelve miles out of the city on the Sante Fe railroad, has been engaged in the manufacture of lime in this city for thirty-five years. He is probably now the oldest manufacturer of lime in Chicago. He has built up a reputation second to none, and he has, from the start, handled the best of materials and has been found to be thoroughly reliable. From his quarry is obtained the famous black stone so often seen here. It is difficult to see what has become of the materials with which he has supplied the city. In thousands of the best buildings, public and private, the products of his quarry and of his shop may be found. He was born in Vermont in 1828, and came to Chicago in 1847, and here has since resided. At that time the city had only about twenty-five thousand population. His father was a native of Massachusetts and by occupation was a railroad contractor and builder of canals. He died about twelve years ago. Henry Rice was married in 1850 to Miss Mary A. Crocker, by whom he has two children—a son and a daughter: The son, George W. is now associated in business with his father, while the daughter is the wife of James Arthur. Mr. Rice is a member of the Builders & Traders' exchange, and has been for many years, his residence being at 1023 Warren avenue. He is not only one of the well-known business men of the city, connected with the building interests, but is also a historical character and one of the oldest residents of the place. He is well known, and his character is above reproach.

James Beynon, a member of the firm of Beynon & McMurray, cement, coal, wood and brick dealers, is a native of Narberth, Pembrokeshire, Wales, where he was born January 27, 1833. After receiving a liberal education, he was employed at the rolls, in the Llynvivale iron works, Maesteg, Glamorganshire. From one position to another he rapidly advanced until finally he became head bookkeeper in that large establishment, and assistant manager of the works, which position he held for fourteen years. In 1867 he came to America and settled at Cleveland, Ohio, where he entered the employ of the Ætna Iron & Nail Company. In 1870 he was appointed general superintendent of the Phoenix iron works, at Cleveland, in which capacity he remained until 1873. That year he accepted the position of general superintendent of the Vulcan iron works, St. Louis, then considered the largest nail mill in the West. For three years and a half he was employed there, then, partly owing to the depression in the iron market and the desire of the company to convert the plant into a Bessemer steel rail mill, Mr. Beynon resigned, shortly afterward accepting the position of superintendent of the Belleville works, Belleville, Ill. Here he remained until 1878, when he was offered and accepted the position of superintendent at Brown's mills, South Chicago, which he held until the mills closed. In 1880 and 1881 he was engaged in building the North Chicago rolling mills, now one of the Illinois Steel Company's plants, and in 1882 started the business he is now engaged in at South Chicago, Grand Crossing and Brookline. In 1887 he took J. W. McMurray into partnership, and the firm is known as Beynon & McMurray, wholesale and retail dealers in coal, lime, brick, cement, etc. In this line the

firm has an extensive trade among the best builders at Grand Crossing, Brookline and other points in South Chicago. Mr. Beynon has taken some interest in politics, but only when the town ward or community in which he lived was being overrun by unscrupulous or overzealous partisans. At the citizens' convention held at Grand Crossing in 1882, he was nominated, although unknown to himself, for the office of supervisor of the township of Hyde Park, which covers an area of forty-eight square miles. He was elected to the office by a large majority, and reelected in 1884 by a majority of two thousand nine hundred and thirty-six. In politics Mr. Beynon is a strong republican; in religion, a Baptist. He is also a member of the Knights of Honor. Mr. Beynon is a most popular man, which is largely due to his unquestioned honesty, kindness and hospitality.

J. W. McMurray, of Beynon & McMurray, dealers in cement, lime, plaster and general builders' supplies, South Chicago, Grand Crossing and Brookline, is one of the best known business men on the south side, and bears an excellent reputation as such. Mr. McMurray has charge of the Brookline office of the concern. He was born at Wheeling, Va., in 1829, where he received a common-school education. Before attaining his majority, his father died, and to the young man there came the responsibility and emoluments of a large dry goods business. Three years later he was burned out, and subsequently he entered into partnership with Jacob Sensenning, in the same line of trade, on Main street, Wheeling. The firm prospered so well that their business soon overshadowed that of less fortunate competitors. Despite all this, Mr. McMurray got the western fever, and, in 1859, located at Utica, Mo., where he married Miss Mary L. Lowe, a village belle. Shortly after his marriage he concluded to try his fortune in the thriving little town of Chicago. He entered the employ of Franklin MacVeagh & Co., as a traveling salesman, and proved his worth by remaining with that concern for fourteen years. Since then he has been associated with Mr. Beynon, a short history of whom is given above. Mr. McMurray has a comfortable fortune, although at one time he suffered a fire loss of \$25,000. In 1863 he served his country as post adjutant at Louisville, Ky.

Harry W. Murphy, the representative of the city department of the Chicago Adamant Plastering Company, 517 Chamber of Commerce building, was born in Philadelphia, Penn., June 28, 1852, was educated in that city, and at the age of fifteen years began a five-year apprenticeship at the plasterer's trade with William and Joseph Poscoe, prominent plasterers of Philadelphia, who are still in business in that city. After thoroughly learning his trade, he worked as a journeyman for five years, then gave up his trade to engage in the wall-paper business in his native city, which calling he followed with success until the spring of 1887, when he became an employe of the Northwestern Adamant Manufacturing Company, at Minneapolis, Minn., as general agent and expert. He continued with this company until he became superintendent for the George A. Fuller Construction Company, which position he held until he formed his present connection. He is a Mason, and is past chancellor of Adherent lodge No. 124 of the Knights of Pythias of Philadelphia.

The following sketch was received too late for proper insertion:

James J. Egan, architect, 712, 85 Dearborn street, who is recognized as one of the most skillful and distinguished architects of Chicago, began the practice of his profession here in 1870. He is a member of the Western Association of Architects, and possesses an accurate knowledge of all technical requirements, as well as a practical experience and a thorough appreciation of modern and advanced ideas, and among the prominent structures which owe their beauty of design and completeness of construction to his skill and care, may be named the Hotel Ryan, St. Paul, Minn.; the new and large hotel at Duluth, Minn.; the Cathedral of San Francisco, at San Francisco, Cal.; St. John's church; St. Jarlath's church; the Cook county courthouse; county jail and criminal court building; as well as many other business structures and fine residences here and elsewhere. He employs a full force of skilled draughtsmen, and is prepared to furnish designs, estimates, etc., for all classes of buildings, and to superintend their construction in the most efficient manner.

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